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Innovative communication, effective coordination and knowledge
management in UK local authority planning departments



PhD Thesis
November 2015

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Kindness is the greatest of all balms ~ Rumi

Dedicated to

all who suffer from unfairness, prejudice, arrogance and egotism

this thesis work is indeed dedicated to my kids !!!

**sincere friends and colleagues ... who made me
stronger, better and more fulfilled !!!**



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Abstract

This thesis sets out to examine the scope for integrated knowledge based planning systems. Five planning departments in the South East Midlands of the UK have been investigated through environmental appraisal, conceptual modelling and empirical evidence gathering. The results of analyses suggest a number of configurations, which could provide reformation instruments in the context of technological innovation, social coordination and knowledge management for sustainable development.

This research study provided the insights and learning into how to successfully develop and implement an integrated knowledge based planning system. The primary aspiration of this research was to develop a robust pragmatic framework to support an efficient and effective delivery of the planning system in the UK local government towards sustainable development. A mixed research methodology was employed for the research fieldwork. Firstly, an extensive review of literature took place to summarise and synthesise the arguments of the key research propositions contributing to the development of an integrated knowledge based planning system. Secondly, exploratory fieldwork took place as an appropriate methodology in this study, applying the semi-structured interview and questionnaire techniques to gather data from senior level planning officials who were directly involved in the planning system transformation.

This study was initiated by examining the previous planning environment in the UK local government and its transformation from its conventional state to a contemporary emergent state. The fieldwork was carried out to identify the key supportive and preventive knowledge factors for both explicit and tacit knowledge domains. As a result, the nature of successful technology based initiatives was determined and solutions to the possible emerging challenges were appraised.

Keywords: *Knowledge Management; Innovation; Sustainable Development; ICTS; Socio-Technical System; Planning System; Local Authorities; E-government*

Declaration

This is to certify that:

- (i) This thesis project comprises my original work towards the PhD except where indicated.
 - (ii) Due acknowledgement has been made in the text to all other material used.
 - (iii) The thesis is almost 69,571 words in length, exclusive of table, graphical illustrations, bibliographies and appendices.
-

Nasrullah K. Khilji -----

Researcher Profile

Nasrullah K. Khilji is an MBA graduate from University of Wales, Cardiff and currently involved in higher education teaching and learning at the University of Bedfordshire and the University of West London. He is based at the innovation technology park, Cranfield University as a project management consultant and senior corporate training facilitator. He has expertise in project management, knowledge management, commercial and marketing strategies, MIS, HRM, ITMS, ITIL, BIIT, planning and process management, organisational behaviour, e-commerce, leadership and entrepreneurship.

Publications and Conferences

Publications	1	Khilji, N. and Roberts, S. (2015) An exploratory study of knowledge management for enhanced efficiency and effectiveness: the transformation of the planning system in the UK local government. <i>Journal of Information and Knowledge Management</i> . 14 (01). p.115-132. Available from http://www.worldscientific.com/toc/jikm/14/01
	2	Khilji, N. and Roberts, S. (2014) The role of ICT strategy and knowledge management in the reform of the UK local government planning system. <i>Journal of Technologies in Knowledge Sharing</i> . CG Publisher. 10 (01). p.17-30. Available from http://jtkc.cgpublisher.com/product/pub.299/prod.5
	3	Khilji, N. and Roberts, S. (2013) An exploratory study of knowledge management in the UK local government planning system for improved efficiency and effectiveness. <i>Conference Proceedings, 10th International Conference on Intellectual Capital, Knowledge Management and Organisational Learning</i> . The George Washington University. Washington. 1 (2). p. 551-560. Available from http://issuu.com/acpil/docs/icickm2013-proceedings-issuu2
	4	Khilji, N. and Roberts, S. (2013) The role of innovative communication channels, effective coordination strategy and knowledge management in the UK local government planning system. <i>Journal of Information and Knowledge Management</i> . 12 (04). p. 315-332. Available from http://www.worldscientific.com/toc/jikm/12/04
	5	Khilji, N. and Roberts, S. (2013) Auditing the impact of knowledge management on human and technological resources in the UK local government for planning processes: <i>VISTAS</i> . 2 (2). p.72-90. Available at http://www.uwl.ac.uk/research/our-impact/vistas-journal/volumes/vistas-volume-2-issue-2

Conferences	1	Paper presentation ' <u>An exploratory study of knowledge management for enhanced efficiency and effectiveness: The transformation of planning system in the UK local government</u> ' in the 10th International Conference on Knowledge Management (http://ickm2014.bilgiyonetimi.net/) and the 5th International Symposium on Information Management in a Changing World in Antalya, Turkey between 24-26 Nov, 2014.
	2	Paper presentation ' <u>The role of ICT strategy and knowledge management in the UK local government planning system refinement</u> ' in the 10 th International Conference on Technology, Knowledge and Society at Universidad Complutense-de Madrid, Spain between 06-07 Feb, 2014
	3	Paper presentation ' <u>The role of innovative communication channels, effective co-ordination strategy and knowledge management in the UK local government planning system</u> ' in the 9 th International Conference on Knowledge Management at the McGill University, Montreal, Canada between 01-03 Nov, 2013
	4	Paper presentation ' <u>An exploratory study of knowledge management in the UK local government planning system for improved efficiency and effectiveness</u> ' in the 10 th International Conference on Intellectual Capital, Knowledge Management and Organisational Learning – ICICKM 2013 at the George Washington University, Washington, DC, USA between 24-26 Oct, 2013
	5	Paper presentation ' <u>An integrated knowledge based planning system in the UK local government</u> ' at the KIM2013 Knowledge and Information Management Conference, OR Society, Coventry, UK between 02-04 Jun, 2013
	6	Paper presentation ' <u>Tips on giving research presentation</u> ' at the Research ² 2012 PhD Student Conference, Presentation, Dissemination and Publication Conference, Loughborough University, UK between 19-20 Mar, 2012
	7	Paper presentation ' <u>the application of information and communication technologies in the UK local government planning system to deliver effective and efficient services</u> ' at the 4th Annual Information Studies Postgraduate Symposium, Department of Information and Communications, Manchester Metropolitan University, Manchester between 05-06 May, 2011
	8	Paper Presentation ' <u>Applications of knowledge management in the UK local government planning system</u> ' in the 2010/11 Annual Conference for Postgraduate Research MPhil/PHD Students at University of West London, UK on April 5 th , 2011
	9	Paper presentation ' <u>Research Design and Data Analysis</u> ' at the Research ² 2011 PhD Data Analysis Conference, Department of Information Science, Loughborough University between 07-08 Jul, 2011
	10	Poster presentation ' <u>An exploratory study of innovative communication channels, effective coordination strategy and knowledge management in UK local government</u> ' at the Annual 2009-2010 MPhil/PhD Conference at Thames Valley University, London

Acknowledgements

I would like to take the opportunity to acknowledge the great help and support of all those who have collaborated on this thesis work and those who have supported me throughout this time. During the entire work of my PhD research, I have benefited greatly from the support, advice and help from sincere supporters.

First and foremost, I must sincerely thank my main supervisor Dr Stephen A. Roberts for his guidance, constructive criticism and advice that have been determinant for the success of this thesis. His focus on high quality research provided me with a firm standard for which I will continue to strive. I am grateful to him for his support, assistance and inspirational enthusiasm throughout the duration of this research. I am also thankful to Mr. Bruce Laurie and Dr Anthony Olden, my second supervisors for their valuable input and assistance during this time.

It has been a great pleasure working with the five local government planning departments in the South East Midlands who participated. I would like to thank all those from the planning support services who truly contributed to make this research an enjoyable and rewarding experience. In particular, I am grateful to Angela, Paul, Ian, Helen, Peter, Sandra and Matthew for their continuous help and support during the fieldwork for data collection, analysis and validation.

I am also indebted to my colleagues for their continuous assistance and support, though I cannot adequately express my appreciation to them. I am so grateful of being a part of my social and professional networks. I am also gratified to my wife, kids and the entire family for their unconditional love and patience. Thank you for all those times you waited for me in patience. I would like to thank my adorable kids for all the joy they brought to my life and for cheering me up when I was down. There are not enough words to express my love for you. Finally, I am ever grateful to my family, kids and all sincere friends for their enduring love and support during my doctorate research study.

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Abbreviations

List of Abbreviations

BBC	Bedford Borough Council
BURISA	British Urban and Regional Information Systems Association
BDA	Bedford Development Authority
BIS	Business innovation and skill
BLTP	Bedfordshire Local Transport Plan
BPF	British Property Federation
BSA	British Sociological Association
CBC	Central Bedfordshire Council
CIPFA	Chartered Institute of Public Finance and Accountancy
CMT	Coordination, motivation and training (Research Model)
CSF	Control Shift Framework
DBIS	Department for Business, Innovation and Skills
DBSC	Delivering Better Services for Communities
DCLG	Department of Communities and Local Government
DMPO	Development Management Procedure Order
DPDs	Development Plan Documents
EEDA	East of England Development Authority
EERA	East of England Regional Authority
ERP	Enterprise Resource Planning
ESD	Effective Service Delivery
ESRI	Economic and Social Research Institute
FCLG	Framework for Communities and Local Government
FCR	First Contact Resolution
GIS	Geographic Information System
IEC	International Electro-technical Commission

HMRC	HM Department of Revenue and Customs
HRM	Human Resource Management
ICTs	Information and Communication Technologies
ICT4D	ICT for development
IDeA	Improvement and Development Agency for Local Government
IHDP	International Human Dimension Programme
IPC	Infrastructure Planning Commission
ISO	International Organisation for Standardisation
JTCPA	Journal of the Town and Country Planning Association
KM	Knowledge management
KPR	Killian Pretty Review
LAA	Local Area Agreement
LACORS	Local Authorities Coordinators of Regulatory Services
LARIA	Local Authorities Research and Intelligence Association
LBC	Luton Borough Council
LDDs	Local Development Documents
LDF	Local Development Framework
LEP	Local Enterprise Partnership
LGA	Local Government Association
LGDC	Local Government Delivery Council
LGE	Local Government Employers
MKC	Milton Keynes Council
MKCC	Milton Keynes Conference Centre
MKIG	Milton Keynes Innovation growth
MKSMSRS	Milton Keynes and South Midlands Sub Regional Strategy
LPAs	Local Planning Authorities
NBC	Northampton Borough Council
NLGN	New Local Government Network
NPPF	National Planning Policy Framework
ODPM	Office of the Deputy Prime Minister
OECD	Organisation for Economic Co-operation and Development
PARSOL	Planning and Regulatory Service on-Line
PAS	Planning advisory services
PH	Planning Help
PKOT	Process, Knowledge, Organisation, Technology
PPAs	Planning Performance Agreements
PPS	Planning Policy Statement
PTC	Planning for Town Centres
RIEPs	Regional Improvement and Efficiency Partnerships
ROI	Return on Investment
RPS	Resource Planning Software
RTPI	Royal Town Planning Institute
SCS	Sustainable Community Strategy
SECI	Socialisation, Externalisation, Combination and Internalisation
SEEDA	South East of England Development Authority
SEMLEP	South East Midlands Local Enterprise Partnership
SOCITM	Society of Information Technology Management

SoPO	The Society of Procurement Officers in Local Government
STS	Socio-technical System
TCPA	Town And Country Planning Association
TCP/ IP	Transmission Control Protocol/ Internet Protocol
UNDP	United Nations Development Programme
UK	United Kingdom
VoIP	Voice over internet protocol

Glossary

Glossary

4ps	4ps is now Local Partnerships, a joint venture between the Local Government Association and Partnerships UK, incorporating 4ps and all its current services. Private Finance Initiative/Public Private Partnerships (PFI/PPP).
Act of Parliament	An Act of Parliament creates a new law or changes an existing law. An Act is a Bill approved by both the House of Commons and the House of Lords and formally agreed to by the reigning monarch (known as Royal Assent). Once implemented, an Act is law and applies to the UK as a whole or to specific areas of the country.
Bureaucracy	A bureaucracy is an organization of non-elected officials of a government or organization who implements the rules, laws, and functions of their institution.
Cabinet Office	Comprised of several internal regulators for the Government and Civil Service.
Case Study	Empirical inquiry investigates a contemporary phenomenon in depth and within its real life context, especially when the boundaries between phenomenon and context are not clearly evident.
CMT Model	The preliminary research model that supports innovative communication channels, effective coordination strategy and knowledge management to put together for team coordination, staff motivation and ongoing training in planning process.
Coalition Government	A coalition government is a cabinet of a parliamentary government in which several political parties cooperate. The Conservative and Liberal Democrat coalition is the present Government of the United Kingdom, formed after the 2010 general election.

Communication Channels	A communication channel refers either to a physical transmission medium such as a wire/cable or to a logical connection over a multiplexed medium such as a radio/internet.
Coordination Strategy	Co-ordination strategy is the unification, integration, synchronization of the organisational efforts and its group members so as to achieve a unity of action in the pursuit of common goals. Management seeks to achieve co-ordination through basic functions of planning, organizing, staffing, directing and controlling.
Data	Data is a collection of facts, figures and statistics related to an object. Data can be processed to create useful information. Data is a valuable asset for an organization.
DirectGov	DirectGov is the British government's digital service for people in the United Kingdom, which provided a single point of access to public sector information and services.
E-Government	E-Government is digital interactions between a government and citizens (G2C), government and businesses/ Commerce (G2B), government and employees (G2E) and also between government and governments/ agencies (G2G).
egov4u	The 'eGovernment for You' (EGOV4U) is a European Commission (EC) funded project that ran from September 2010 until June 2012.
<i>Epistemology Assumption</i>	An epistemology assumption is concerned with whether the social world can and should be studied according to the same principles and procedures as the natural sciences.
Geographic Information System	A geographic information system is a system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data
HM Govt	Her Majesty's Government: The phrase Her Majesty's Government (His Majesty's Government during the reign of a male monarch) is a formal term referring to the governments of various jurisdictions within the Commonwealth realms.
IDOX	IDOX group is a leading developer and supplier software solutions and services to local government for core functions relating to land, people and property.
Information	The manipulated and processed form of data is called information, which is more meaningful than data. It is used for making decisions in organisation.
info4local	The info4local is a government website and email alert service. It gives local authorities a quick and easy way to find relevant information on the websites of central government departments, agencies and public bodies.

INLOGOV	The Institute of Local Government Studies (INLOGOV) is the leading academic centre for research and teaching on democratic local governance and strategic public management based in Birmingham University.
Innovation	Innovation is the creation of better or more effective products, processes, services, technologies, or ideas that are accepted by markets, governments, and society.
IM	Information management (IM) is the collection and management of information from one or more sources and the distribution of that information to one or more audiences.
Integrated Technology	Integrated technology is used to improve effectiveness and efficiency in planning processes for sustainability development by enhancing process automation, information concurrency and avoiding data recopy.
Killian Pretty Review	The Killian Pretty Review was an independent review of the planning application system in England, commissioned in March 2008.
Knowledge	Knowledge is a fluid mix of framed experience, values, contextual information, expert insight and grounded intuition that provides an environment and framework for evaluating and incorporating new experiences and information.
Knowledge Management	Knowledge management (KM) comprises a range of strategies and practices used in an organization to identify, create, represent, distribute, and enable adoption of insights and experiences. Such insights and experiences comprise knowledge, either embodied in individuals or embedded in organizations as processes or practices.
LGID	Local Government Improvement and Development. LGID is one of the six bodies that form the Local Government Group.
Local Authorities	County councils, borough and district councils and unitary authorities throughout England, Northern Ireland, Scotland and Wales. There are 433 Local Authorities in the UK: 27 county councils, 55 unitary authorities, 32 London boroughs, 36 Metropolitan boroughs, 201 districts, 32 Scottish unitary authorities, 22 Welsh unitary authorities, and 26 Northern Ireland districts. There is a list of parish and town councils, the lowest tier of Local Government with limited powers.
Local Planning Authority	A local planning authority is the local authority or council that is empowered by law to exercise statutory town planning functions for a particular area of the United Kingdom.
MIS	A management information system (MIS) provides information which is needed to manage organizations efficiently and effectively. Management information systems involve three

	primary resources: people, technology, and information or decision making.
National Planning Policy Framework	The National Planning Policy Framework is published in March 2012. This is a key part of our reforms to make the planning system less complex and more accessible, to protect the environment and to promote sustainable growth.
NICTMP	In UK the functioning National ICT Category Management Programme Board has been developed from the Council Chief Information Officers and SOCITM networks.
Online Planning Services	Online planning is defined as planning delivery through internet protocols and other ICT methods that includes delivery by telephone if the officer receiving the call and can access electronic information or update records online there and then.
Ontological assumption	Ontological assumption concerns with the nature of reality and real life issues.
Organizational Behaviour	Organizational Behaviour is the study and application of knowledge about how people, individuals and groups act in any organizations.
Philosophy	Philosophy is a study of problems which are ultimate, abstract and very general.
Planning Act	The Town and Country Planning Act is an act of the British Parliament regulating the development of land in England and Wales
Planning Information System	Planning Information System is a method for analysing, defining and designing information architecture of planning and development. Planning information system helps planners to find their work more informative with easy data transformation in various forms.
Planning Permission	Most new developments and major changes to existing buildings or to the local environment need consent from Local Planning Authority, it is known as planning permission.
Planning Portal	The Planning Portal provides online services to citizens and businesses, the broad commercial planning and building sectors and all English and Welsh Local Planning Authorities (LPAs), delivering timely, accurate and accessible information and tools that are helping to demystify planning and building regulations.
Planning System	Planning System is the process of managing the development of land and buildings. The purpose of this system is to save what is best of local heritage and to improve the infrastructure upon which communities depend for a sophisticated existence.
PKOT	Process, Knowledge, Organisation and technology 'this is the main research empirical framework of an integrated knowledge based planning system.
Research	Research can be described as a scientific and systematic search for significant and proper information on a specific topic.
Research Philosophy	Research philosophy refers to the systematic search for knowledge, values, reasoning, mind, and language.
Research Design	Research design is considered as a blueprint of research study.

Research Methods	The term Method refers to the choices we make about a case study, procedures of data gathering, forms of data analysis etc.
Research Methodology	Research methodology is actually the way in which the research is conducted and carried out.
Research Paradigms	The research paradigms actually use the alternatives of suitable methodologies and to choose the most appropriate methods for research study.
Social Media	Social media includes web-based and mobile technologies used to turn communication into interactive dialogue. There are six different types of social media: collaborative projects (e.g., Wikipedia), blogs and microblogs (e.g., Twitter), content communities (e.g., YouTube), social networking sites (e.g., Facebook), virtual game worlds (e.g., World of Warcraft), and virtual social worlds (e.g. Second Life).
Sociology	Sociology is the scientific study of human social life, groups and societies.
Sociological Behaviour	Sociological behaviour is the behaviour directed towards society, or taking place between, members of the same species.
South East Midlands	This area comprises the whole of Bedfordshire, the whole of Northamptonshire, and parts of Buckinghamshire (the districts of Milton Keynes and Aylesbury Vale).
Telecommunication	Telecommunication is the transmission of information over significant distances to communicate.
UK Local Government	Local government in the United Kingdom has origins that pre-date the United Kingdom itself with each of the four countries of the United Kingdom having a separate system. Local Government plays a vital role in representing the interests of its citizens, delivering and commissioning local services and promoting the Big Society.

PART – I

BACKGROUND

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CHAPTER 1**BACKGROUND AND
CONTEXT**

The chapter one (Ch-1) presents the overview of this research study and suggests a research strategy with key investigative objectives. The significance of an integrated knowledge based planning system is underlined to justify the orientation of this study. The research fieldwork is discussed in order to propose a process model and then the key challenges are detailed. The researcher defined the genesis and implications of this research work. This chapter also shows how this study differs from other research studies and how this research contributes to enhance the efficiency and effectiveness of the planning system.

1.1 The Principal Goal

This thesis is based upon an empirical investigation which sets out to examine the continuous transformation of the planning system in the UK local government as experienced in five authorities. The research study was designed around hypotheses relating to innovative communication channels, effective coordination strategy and integrated knowledge management. This study is built upon fieldwork carried out in five participating local authorities in the South East Midlands and on literature drawn from many different disciplines to answer the research question.

The research question states *‘what role does an integrated knowledge based planning system play to achieve enhanced and sustainable development within the UK local authorities?’* In order to respond to the research question, this study was carried out to justify the need for an integrated knowledge based planning system through improved coordination, motivation and training. The socio-technical system was examined for continuous transformation to achieve a smart and sustainable development.

According to Chowdhury (2013) ‘the simplest and yet the most appealing definition of sustainability was developed at the 1987 UN conference where it was recognized that sustainable development means *“meeting the needs of the present without compromising the ability of future generations to meet their own needs”* (UN, 1987)’. He further defined a similar description that emphasizes on maintaining a balance between nature, productivity and business has been provided by the US Environmental Protection Agency (Chowdhury, 2013).

Taking these two definitions as a root with their sense of dynamic equilibrium, this research study adopts a perspective in which the business concepts of efficiency and effectiveness are matched with smartness as the means to obtain sustainability in any area touching on the planning process. Smartness is a state of sustainable response derived from technology and digital innovation on the one hand and on the other hand the way in which knowledge is processed in a social and organizational context.

The main goal of this research study was to review the role of knowledge management in the local government planning system. The research question was focused to examine the transformation of planning system towards enhanced efficiency and effectiveness within the UK local government. The link between set aims, objectives, problematic (key challenges) and subsequent investigatory steps are discussed in this chapter (see section 1.12). The core area of problem in this study is related to identify key knowledge factors for the development of an integrated knowledge based planning system (see section 5.5). Empirical research and process modelling is suggestive of how new configurations of resources and structures could be evolved to assist in such renovation and re-profiling. The key challenges of problems for investigation in this research study are deliberated below (see section 1.9: Table 1.1).

1.2 The field of study: planning processes and knowledge management

The UK local government is concerned about promoting an open knowledge sharing culture in order to improve management performance within its internal and external environments. The local government has hosted a variety of performance measurement programmes to ensure an efficient and effective planning system mechanism for sustainable developments. The local government has identified the enhancement of public service delivery as a key strategy to support the delivery of wider economic policy goals. The Cabinet Secretary and Head of the Home Civil Service said, *‘in the twenty-first century, information is the force powering our democracy and our economy. Both the private and the public sector increasingly rely on information and knowledge, and create value through their ability to manage these valuable assets’* (O'Donnell, 2008).

This research study investigates the role of knowledge management in relation to the utilisation of ICTs and their impact on the people who work within the planning system. The planning system reforms desire to enhance the local communities' standard of life, while saving cost and improving the profitability for local government. This research study investigates how various technologies support the planners' assigned tasks and how ICTs enable knowledge to be applied during the planning processes. This study tries to bridge the identified gaps by an integrated knowledge based planning system within the social, economic and environmental perspective of sustainable development.

‘The term sustainable development refers to a mode of human development in which resource use aims to meet human needs while preserving the environment so that these needs can be met not only in the present, but also for generations’ (ZME Science, 2011).

Innovations in software development are pointing the way forward. The open source and proprietary enterprise resource planning packages are supplied from various ICT vendors such as Enterprise 2.0 from Oracle, Maximo from IBM, Dynamics AX from Microsoft, mySAP from SAP, AXIS ERP from Consona, SAGE PFW from Sage, NOVO solution from Novotech and A1 ERP from Java. These suppliers have branded this kind of functionality as Enterprise 2.0, to integrate internal and external management information across an entire organisation. It is a combination of content management, enterprise search, and portal technology to link them with web 2.0 tools such as wikis and blogs for knowledge sharing. Microsoft has released SharePoint plus associated office tools to address this challenging issue. It has been acknowledged from the UK local government that now is the time to invest in knowledge management to properly manage and protect their corporate intellectual asset.

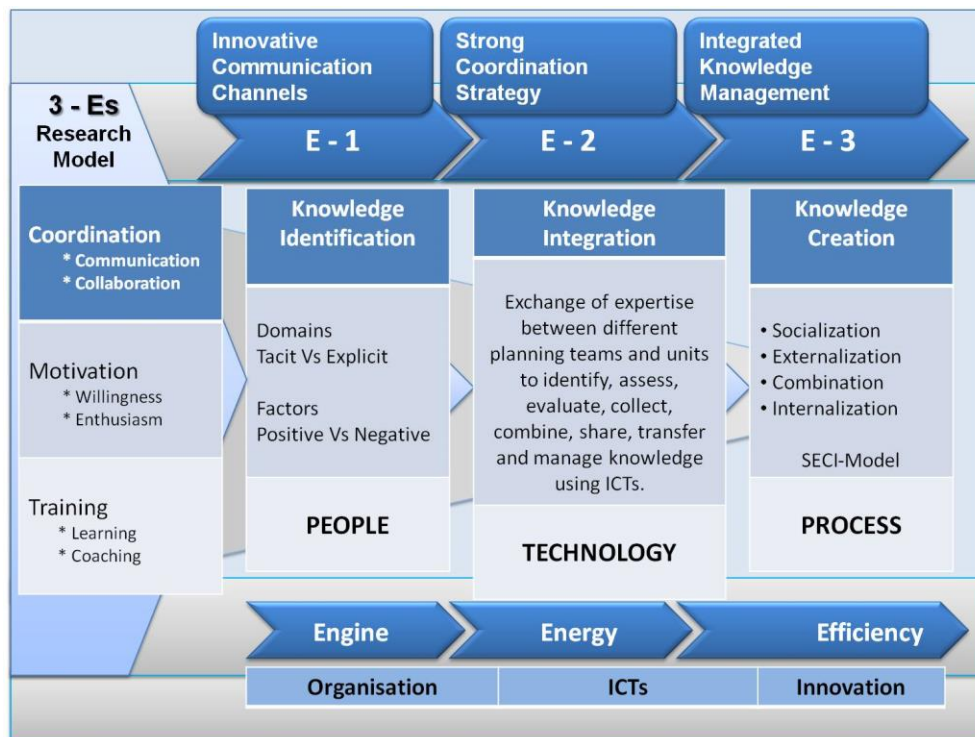


Figure: 1.1 (3Es Model for Planning System 'Engine – Energy – Efficiency')

Source: Nasrullah Khilji (Derived from chapter seven (Ch-7), see Figure 7.1)

It was imperative for this study to understand stakeholders' capacities as well as ensuring there is an alignment in relation to the knowledge management strategy and its implementation requirements. This research study supports an integrated knowledge based planning system with set standards for all stakeholders. Information is always required to be available to everyone in an open environment with free flow for better performance and productivity. This improves transparency in planning system and assists future sustainable development (see chapter seven for more detail (Ch-7)), as graphically illustrated in the above research 3Es Model (Figure 1.1).

The above 3Es Model is explained in more detail in chapter eight (Ch-8), which specifies the three major knowledge management principles: people (Engine), technology (Energy) and process (Efficiency). Knowledge management is not just about obtaining information with the help of ICTs. If organisations want to achieve an open knowledge sharing culture they need to form an environment in which people have strong networks. A well-established network is helpful and valuable for identifying and sharing knowledge to create new intellectual and practical expertise. This can be embodied in many ways, including the design of structure, the design of digital networks and the way senior officers lead organisations (Shehab and Abdalla, 2002; Cullingworth and Nadin, 2003; De Brún, 2005; HM Government, 2010).



Figure: 1.2 (An integrated Expert Online e-Planning System in the Local Government)

Source: adopted from the e-Planning, 2013

An integrated knowledge based management technological system is expected to be dynamic and vigorous in its features; for example, an email database is a significant repository of strategic decisions placed in an email archive. The CMS 'content management system' stores information in action, which is saved in local drives that can get washed when a staff member leaves the office. The enterprise search recovers the corporate memory relating to subject from the archival sources and their respective repositories (Geels, 2005). The ICT tools such as the ERP (Enterprise Resource Planning: Enterprise 2.0) aims to help staff, customers and suppliers to collaborate, share and organise knowledge (Roberts, 2014). The web 2.0 is applied as a part of growing social media platforms within organisations, their partners and customers as illustrated above (Figure 1.2).

1.3 Information and Knowledge Management in Local Government

Information becomes the lifeblood of almost every service delivered by the local government. The process of information and knowledge management is about making smart decisions to achieve organisational competitive advantage and has been noted historically (White, 1974). Information and knowledge management is the corporate responsibility that requires to be addressed from the upper most senior levels of management to the front line worker as discussed in the second chapter. Information and knowledge management is increasingly desired because more information is being created and held today than ever before in human history (Bali et al., 2009).

Information and knowledge management must be contextualized, categorized, calculated and condensed (Davenport & Prusak, 2000). In order to deliver efficient and effective public services and guarantee public accountability, the local government departments must pledge to capture and effectively manage information created, sent and received by them. It is also crucial at the same time that information held by the local government is easily accessible but kept securely. Gordon Brown stated in his 2007 speech, *'freedom of Information can be inconvenient, at times frustrating and indeed embarrassing for governments, but freedom of information is the right course because government belongs to the people, not the politicians'* (FOI, 2008).

The internet and modern technology are opening new frontiers in both our lives and our liberties (Brown, 2011). One of the local council's main assets is its information, which it needs to manage effectively to make appropriate data available seamlessly and securely. According to SOCITM report on local government, *'staff will be largely based at remote and offsite locations, which for some staff could be anywhere, not necessarily close to the local council area'* (2012). In coming days the ICT resources will be much less than at present, with cloud computing enabling the council to select the applications it needs in a flexible way, and to "pay as you go" for ICT access (SOCITM, 2012).

It is crucial to the UK local government that planners balance their planning processes with the need to share information and knowledge in order to provide consistent and joined up services to the public. Knowledge management helps to take people out from silos, encourage strong team integration and with more sharing of good practices to eliminate work duplication. KM is becoming increasingly critical in the UK local government as it strives for sustainable development. All key stakeholders in local government have a responsibility for knowledge, so everyone requires the skills and tools vital to meet such responsibilities.

The public sector organisations need effective information and knowledge management for awareness, business use, sound decision making, security, evidence and accountability. IM and KM in local government allows them to comply with information legislation and government policies. The major impression of knowledge management initiatives in the local authority take the form of the government's national Knowledge Management Project. This initiative was established by the Office of the Deputy Prime Minister in conjunction with the Improvement and Development Agency (IDeA) in 2006. As one of many e-government national projects, this was formerly launched in October 2004 and by early 2007 had reached the roll out phase of its implementation. The main purpose of this project was to encourage the formation and management of an environment that encourages knowledge to be created, shared, learnt and exploited for the benefit of the organisation and its customers (NLGN, 2011).

Knowledge and information management has now been formally acknowledged as a function of local government, in the same way that finance, IT and communications are (Cabinet Office, 2008). This research study has focused on different levels of knowledge management between planning teams engaged in different phases of the planning process. From a theoretical perspective, the first challenge they face is how to demonstrate the value creation from knowledge sharing in order to attain successful knowledge management in enhancing the capabilities of integration and innovation. To identify key supportive and preventive knowledge factors for both tacit and explicit knowledge domains is a challenging issue. This research study tries to evaluate the communication channels between internal and external environments to assess knowledge based planning system. The Nonaka and Takeuchi SECI-Model is examined for valuation, which is discussed in detail in chapter five (Ch-5).

The UK public sector has seen ongoing demands to improve the way it delivers public services. It is always desirable to organise services around the needs of the consumers rather than the suppliers and making them easily accessible. Information is a flow of messages, while knowledge is created by that very flow of information anchored in the beliefs and commitments of its holder (Nonaka and Takeuchi, 1995). This research tries to find out how the UK local government planning system has engaged itself with the notions and tools embodied within knowledge management.

1.4 Knowledge: a Significant Theme for Research Inquiry

Knowledge is something that can be gained by personal experience as well as by combining abstract pieces of information. *‘Knowledge can be regarded as information processed through the human brain, whereas information itself can be seen as an abstract item that can be physically stored in a file or on a hard disk’* (Shin et al., 2001). Knowledge management is a relatively new concept from the early 1990s but most knowledge management practices have always existed in context of management information system well before (Dalkir, 2005).

Knowledge management activities indicate a holistic approach to share knowledge within an organization. Many researchers argue that the concepts of KM in

organisations have become popular as the most important resource for economic motives. This has been confirmed by Liebowitz (1999), who believes that KM is a critical team process because if knowledge is not shared, the cognitive resources available within a team remain under-utilized. The UK local government has recently announced reductions in jobs (Gov.UK, 2012). There is a need that the local authorities to be aware of the risk of losing their knowledge workers and with them their intellectual asset. This will build more pressure on remaining staff to provide effective and consistent planning services. If the local authorities ignore to address this issue and they do not take an appropriate action in time, this may cost them a high price to fill the expanded gap.

It is impossible for the local government alone to properly canalize all planning processes and to address every issue in strategic decision making for sustainable development. To tackle this challenge the local authorities require deeper knowledge transfer policies to be in place for strategic decision making due to the dynamic nature of each planning application. In the current climate of job cuts and financial constraints local government is expected to face a lot of pressure in the near future and many of their key decision makers are likely to lose their jobs.

There will be a continuous need to maintain the strong coordination, staff motivation and continuous training for improved planning system. Without this there will be major disruption to the consistency and delivery of planning services. To address this issue and to fill the identified research gap, it was imperative for this research study to develop and propose an integrated knowledge based planning system framework: see for detail, the CMT Model-I (Figure 5.7) and the PKOT Model-II (Figure 7.2).

1.5 Genesis of Interest in Solutions

The UK local government is seriously looking for innovative and more effective ways to deliver public services efficiently in the light of a substantial economic downturn since 2008 and a delayed recovery. Themes of localism, decentralisation and the big society are the key responses from the UK coalition government. Incremental change and individual cuts are unlikely to meet this challenge with up to 80% of local government spending to tackle social exclusion (ESD, 2011).

Knowledge management is documented as an intellectual asset in the local government planning system, which directly relates to their manpower capabilities. According to the National Planning Policy Framework (NPPF) statement, *'information and communication technologies play essential role in managing knowledge for planning processes'* (NPPF, 2011). Effective Service Delivery (ESD) is a framework of tried and tested tools, guidance and practical examples to support innovation in public service delivery and to deliver better for less. The ESD website incorporates various tools to help local authorities to become able in delivering planning services efficiently (2011).

The successful implementation of a KM initiative in the planning system demands staff collaboration and elimination of functional silos. KM also requires long term commitment and dedication from stakeholders. Furthermore, there are certain tacit and explicit knowledge elements that are either supportive or preventive for the achievement of efficiency and effectiveness in planning system. These include the communication channels, organisational culture, human resources' performance, technological tools' functions, organisational structure, operational efficiency, staff motivation, coordination strategy, training schemes and leadership style (Berger, 2011).

The genesis of this research is to assess the impact of KM on the human resources' efficiency and technological tools' effectiveness as a hybrid socio-technical system. The collected data analysis presents a framework to assess the dynamic nature of knowledge management. This study intends to integrate technological tools with human resources by addressing major issues related to improved performance: the CMT Model-1 in Ch-6 and CMT Model-II in Ch-7 provide rationales. A case study method is applied to examine a hybrid research framework as a socio-technical system that falls within both human and technology paradigms. The data analysis develops two integrated knowledge based planning system frameworks: the *PKOT Model-I* (see chapter six (Ch-6)) and the *PKOT Model-II* (see chapter seven (Ch-7)) to enhance efficiency and effectiveness.

1.6 Local Government Planning System: An Evolving System

Planning shapes the places where people live and work. This study explored what major changes are in place or on the way to manage knowledge, integrate ICTs, organise public services and make knowledge accessible to both the customers and planners. *'The planning system must be a creative exercise in finding ways to enhance and improve the places in which we live our lives'* (Clark, 2011). The new National Planning Policy Framework is replacing over a thousand pages of National Policy with around fifty, written simply and clearly (Planning Reform, 2012). The planning system reforms focus to allow people and communities to participate in local development, which is helpful in order to share and manage local knowledge. The planning system plays a vital role in building local economy and strong and vibrant local communities.

The planning system plays a key role to ensure that local development takes place in a way that is economically, socially and environmentally sustainable. It also has a role to play in helping to cut carbon emissions, protect the natural environment and deliver energy security. In the UK local planning authorities prepare development plans, which set the broad framework for acceptable development in local areas. They are also responsible for assessing most applications for planning permission. There is a one stop source of information on the online Planning Portal. It includes advice on planning permission, online applications and guidance on how the local planning system works (Planning Portal, 2010; Rydin, 2011; Tallen, 2013; and Cullingworth et al., 2014)

The Department for Communities and Local Government is working hard to change the planning system so councils have the freedom to make their own decisions in the best interests of their local areas. To achieve this, the department is ending top down control over local planning decisions and ensuring democratic accountability within the planning system. The UK authorities desired to ensure that in future people who make planning decisions are directly accountable to those whose lives are affected (Communities, 2011). According to the LGID article, *'to meet large scale funding reductions, we will need both joined up local working and innovation which puts users at the heart of service and delivery'* (LGID, 2010). The current 'As-Is' planning system configuration is showing below to sketch the standard UK planning process model (Figure 1.3).

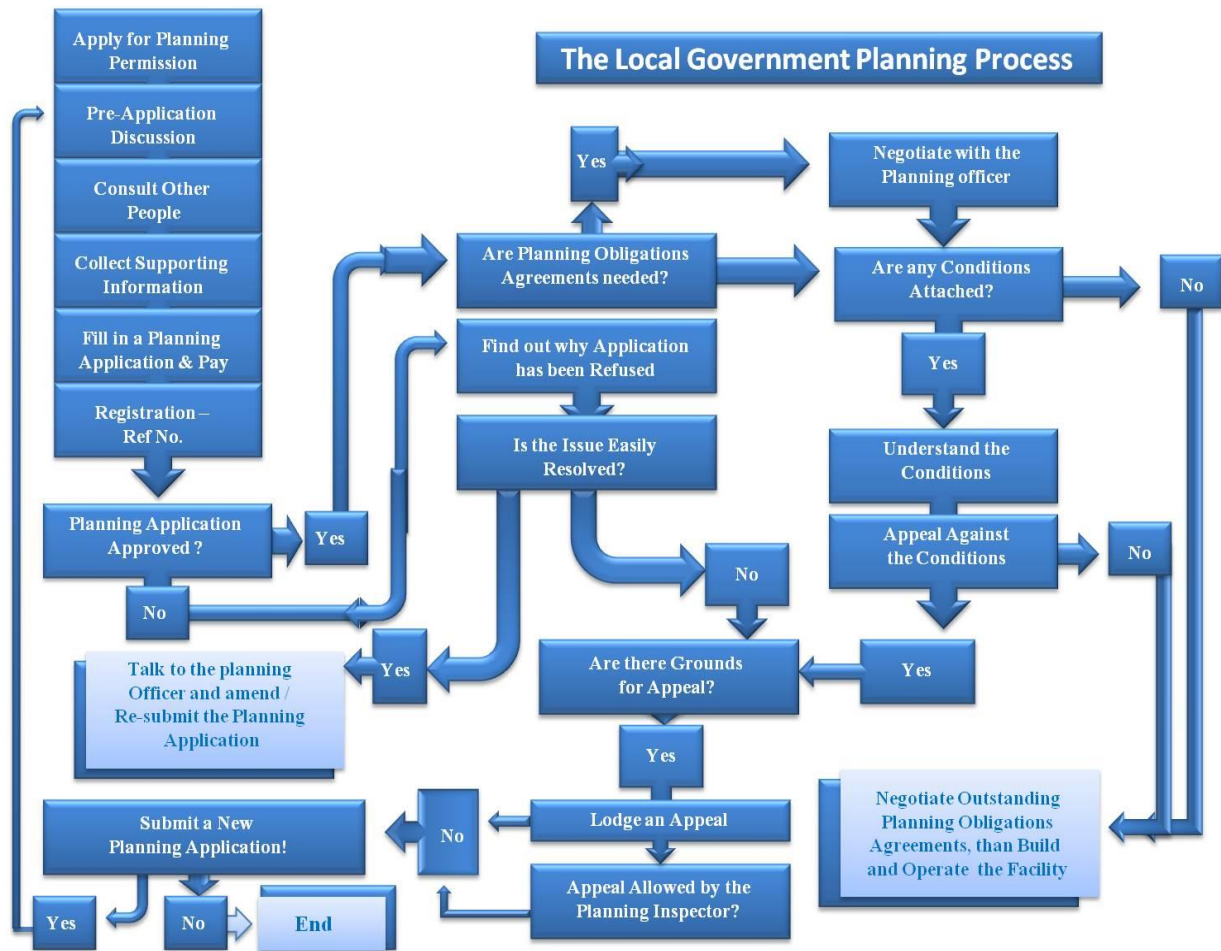


Figure: 1.3 (The UK Local Authority Planning Process Formation Model)

Source: Adopted from 'Town and Country Development Planning Office - TCDPO, 2010

The Coalition Government (2009 - 2015) promised a radical reform of the planning system to give neighbourhoods far more ability to determine the shape of the places in which their inhabitants live. The draft National Planning Policy Framework was published on 25 July 2011 for consultation. This is a key part of the local government reforms to make the planning system less complex and more accessible, and to promote smart and sustainable growth. This reflects the Coalition Government's wider ambitions to reform the planning system so that it is simpler, swifter and more positive in its outlook and operation (Ellis, 2011).

The UK local authorities continue to face greater challenges in meeting the needs of their local communities. The current economic conditions are putting tremendous pressure on local communities and businesses and their demand for effective and

efficient planning services is increasing more than ever. Siobhan Coughlan has a wide range of experience in the UK local government; she stated that *'the local government has Local Area Agreement (LAA) and efficiency targets to meet, as well as responding to the new performance framework and the challenges of comprehensive area assessments'* (LAA, 2013). The local authorities and their partners are uniquely placed to lead transformation on behalf of their communities, supported by the right national and regional frameworks including the Local Government Delivery Council (LGDC) and Regional Improvement and Efficiency Partnerships (RIEPs).

The UK government is making some significant changes to the planning system that will affect the responsibilities of all local planning authorities. The intention is to make the planning system one that better supports sustainable economic growth and jobs, underpinned with the principles of localism, with less 'top-down' prescription and more 'bottom up' involvement (PAS, 2011). The British Property Federation (BPF) is keen to make sure that the planning system is helping, not hindering the UK economy. The successive governments have modified the country's planning system, but there is a general recognition that it still does not work as well as it could, and should. The UK coalition government came into power on the back of Conservative and Liberal Democrat manifestos that included aspirations to planning system reform (BPF, 2011).

1.7 An Integrated Knowledge Based Planning System

This study examined the planning system reformation report, prepared by Joanna Killian and David Pretty, who completed and submitted their report in 2008. They stated that *'the recent economic difficulties, and the very challenging outlook have strongly reinforced the need to have a leaner, more effective and faster applications process that is more responsive to the needs of all users'* (Killian and Pretty, 2008). The government welcomed the Killian Pretty Review final report, which provided a strong foundation for the next stage of planning system reform. In response to the Killian and Pretty recommendations, the UK government has proposed an ambitious, but deliverable programme of measures to create a planning system, which is more proportionate, that operates more efficiently and effectively and is more easily understood by all key stakeholders involved (DCLG, 2008).

The planning officers are finding it difficult to implement effective coordination strategy and to manage knowledge based planning system for regional development. With the increasing demand for 'just in time' expertise, the problem of sharing and retrieving what is really needed becomes more and more substantial. Sharing and managing knowledge is not a tangible thing that can be easily programmed and codified for various planning process needs. Knowledge is something that is gained by personal experience as well as by combining conceptual pieces of information. Knowledge is regarded as information processed through the human brain, whereas information itself can be seen as an abstract item that can be easily stored in a file (Shin et al., 2001).

Knowledge management is an emerging discipline focused both on the effective use of tacit and explicit knowledge existing in organisations as well as on the access to expert knowledge from outside the organisation (Newman and Holzman, 1997; Davenport and Prusak, 1998; McInerney and Day, 2007). The key criterion to deliver planning services constantly and efficiently is that planners have an integrated knowledge based planning system. This requires innovative communication channels, strong coordination strategy and knowledge management to put together team coordination, staff motivation and ongoing skill development. This is discussed in chapter six (Ch-6) in much detail how to enhance efficiency and effectiveness in planning system.

The ICT is generally considered as the best solution to deliver better planning services and most of the time people are expected to deliver outstanding services with the help of innovation and technological tools. It is a debatable argument to verify whether it is technology or human resource that produces the desired result. Technology is not always delivering the desired results successfully and from this research study, it became clear that technology itself is not the sole reason for the system failure (Geels, 2005; Garnsey and McGlade, 2006; Lindgren and Bandhold, 2009). It is interesting to examine how hybrid socio-technical systems enhance the productivity of planning system by combining people' efficiency and technologies' effectiveness as exposed in 3E's Model (Figure 1.1) and reflected in the pragmatic CMT Model (Figure 5.7) in chapter five (Ch-5).

To manage knowledge as an intellectual asset, the planning system is required to better integrate and share knowledge because it plays a crucial role with the appropriate use of emerging technologies (Jashapara, 2010). In the current economic downturn, the local government has much less money to spend, so it is vital for them to cut cost and to enhance efficiency. This has forced a level of creativity and innovation, as well as tight control of programmes, which tend to be smaller or more modular, again as a result of more stringent financial controls (Creese, 2011). Glyn Evans stated that *'it sometimes seems that every other year we have some inquiry into why IT projects fail, whereas perhaps a more meaningful question is why do we try and run business change projects as if they were IT projects?'* (2011). But these are not generally the projects that fail; rather it is those that are focused on implementing a particular policy initiative or reforming the way a specific part of the public service works (Bunse and Fritz, 2012).

The local government has recognised the opportunities that technological developments offer in the transformation of planning system to improve the way it delivers services. The local authorities acknowledge the major benefits to be gained by reforming their planning system constantly. The local government realises the responsibility for information and knowledge management for better service delivery. From the literature review, it is pertinent to note that human resources and organisational culture play an essential role in knowledge management. However, technological tools hold the capabilities to facilitate information management, staff coordination and knowledge integration. Dalkir, for example argues that greater hurdles to successful KM are not technological or process issues but cultural issues (Dalkir, 2011). The combination of technological and human resources as a socio-technical system is the ultimate goal to achieve for planning system transformation as shown in the following developed socio-technical system 'STS-Model' (Figure 1.4).



Figure: 1.4 (STS-Model: Communication Channels, Coordination Strategy and KM)

Source: Nasrullah Khilji (Resultant from Section 9.2 and Appendix E-1 'Section: E-1.2')

1.8 Background to the Problem Area

The core area of problem in this study is related to identify key knowledge factors for the development of an integrated knowledge based system. Empirical research and process modelling is suggestive of how new configurations of resources and structures could be evolved to assist in such renovation and re-profiling. There are some signs that a number of key challenges are beginning to converge to provide a catalyst for a smart and sustainable development.

The analysis of internal (push) and external (pull) factors for the most appropriate planning system was carried out. The push factors include time efficiency, cost saving, greater accountability and transparency. The pull factors include new edge technologies, the restructuring of the public services, the political drive of the 'Big

Society’, the need for more democratic forms of organisation. This research study fits into the wider debate about public policy and economic strategy in the UK Coalition Government (2010-2015). The authorities (centrally or locally) wish to provide better quality public services, at lower cost, more responsibly, with a stronger connection to the client and citizen. The citizen (the consensus suggests) wants efficiency, accountability, convenience, flexibility, a sense of justice (Khilji and Roberts, 2013).

The planning system impacts on the life of the citizen personally (e.g. as a householder with a building or development proposal), in the local context (as a resident), and more widely in terms of the physical and built environment (experienced in town and country), in impacts on business and organisations and in terms of spatial movement by private and public means. The problem for investigation in this research study includes the impact of major changes in the planning system and ICT strategies at local level and their alignment with European and International policies. The councillor for the Royal Borough of Windsor and Maidenhead, told a meeting of the British Computer Society's Open Source Group, *‘how the Big Society envisioned service providing units being swapped like cassettes. It will only work if we have a set of standards’*, said Maxwell, who co-wrote conservative technology policy’ (Maxwell, 2010). The local government ICT strategy aims to support councils to secure their essential technological advancement and innovative communication channels.

There are various initiatives that are already taken in practices at the local government level, which need integration and uniformity to become more collaborative. In UK the functioning National ICT Category Management Programme Board (NICTMP) has been developed from the Council Chief Information Officers and SOCITM networks. In practice the NICTMP reports to the Local CIO Council and the LGA as a one voice engaged with various regional ICT groups (LG-ICT, 2012).

The existing UK government regional bodies such as SOCITM and SoPO cover the ICT Management bodies contributing data, management information (MI) as a representative to the NICTMP to lead the delivery of collaborative projects. On the other

end the Knowledge Hub has been created as a well administered, easily accessible national Knowledge Hub, hosted by the LGA, which is supposed to serve as a documents library and communications hub for knowledge management. This study examines how to integrate these technology driven initiatives towards sustainable development. The integrated knowledge based planning system is based on web technologies to connect various systems to enable knowledge sharing. An integrated knowledge based planning system idea is best illustrated by Austin iShare data integration platform (Figure 1.5).

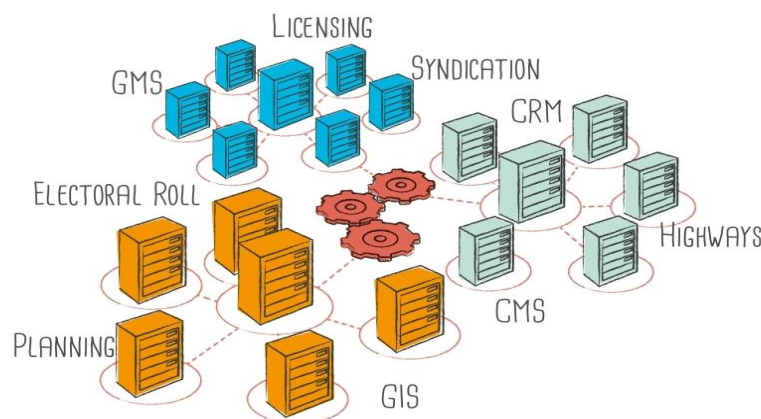


Figure: 1.5 (iShare Integrates with a Number of Key Local Government Systems)

Source: Austin 2014

The local communities develop a feeling of belonging and involvement in the planning system, which has much to do with the access to information, knowledge, communication and process. In other words citizens pay their taxes and opt into the system but in return want fair treatment and fair results. This has always been the ideal of relations between government and citizen, but has (truthfully) rarely been achieved or at best only achieved in parts. It is not possible to simply suggest that changes to the planning system will deliver a total result, but there is a good chance that the planning system can use emerging technologies according to international set standards to improve its information and knowledge management capability to produce a tangible change. In 2010 around one third of EU citizens were still excluded from using e-Government services through a combination of lack of skills, social conditions and affordable access to suitable technology (Foley *et al.*, 2005).

The emerging technologies have presented new scope in the last twenty years for a fundamental reorientation of information and communication channels. A number of organisations, perceiving the value of measuring intellectual assets, recognized the growing importance of organisational knowledge as a competitive asset (Edvinsson and Malone, 1997; Sveiby, 2003; Cameron and Green, 2012). Information systems provide a comprehensive and integrative coverage of essential new technologies. Information systems offer benefits to business models and managerial decision making in an exciting and interactive manner (Norton and Kaplan, 1996; Laudon and Laudon, 2009).

The local government ICT strategy has been making slow progress to pick up the pace in order to meet deadlines (Sustainable Gov, 2011). Compared to the private business sector, the local government system has been a relatively slow adopter of the ICTs: following rather than leading. In the last two decades, the rate of change has accelerated as the impact of the WWW and especially web 2.0 has grown into web 3.0. But the public appetite to use technology has outpaced the institutional appetite so that the public has high expectations of the level of services delivered through emerging technologies (Anderson, 2012; Aghaei et al., 2012). This study investigates how to build the planning system with more commanding interfaces to achieve its future 'to-Be' state.

1.9 Key Challenges: 'Problems for Investigation'

In the light of the researcher's general hypothesis and research study key propositions, there was a potential to identify and develop a pragmatic framework. This research study designed a platform to outline major challenges of identified problems for investigation and to present a number of process models for evaluating a subsequent programme of investigation. In this chapter, the researcher recognised major challenges and methods, through which the planning system can adapt to the prevailing situation. A review of the literature indicates that there are two key challenges as reflected below:

- (i) First challenge is largely related to the internal processes of planning departments where business goals and objectives are mediated. The internal processes influence the efficiency and effectiveness through organisational

systems and the roles of different human operators. Problems for investigation in this area of problematic includes: vision, strategy, culture, leadership, motivation, coordination and training.

- (ii) Second key challenge is related to the external environment of the planning process that involves the internal mechanisms and their engagement with the external features. External environmental factors influence efficiency and effectiveness of both technological and human resources within the planning system. Problems for investigation in this area of problematic include: political, social, legal, technological and economical.

In the internal setting, experience and observation suggest that the planners' performance is based fundamentally on three important factors: the ability to perform, the organisational culture and the level of motivation. Motivation is the energy to lead the planning team for best performance in a coordinating environment with team workers' self-actualization, self-esteem, career path, values and income status as operators. This research study evaluates the crucial role played by the constituent internal KM factors. In the external setting, the planning framework is an arena for the realization of constructive goals that can lead to an improved performance.

The empirical CMT Model-I (developed and presented in chapter six), and proposed 'As-Was to As-Is' framework were based on the research key propositions to reflect the supportive and preventive factors from internal and external environments. This is discussed in chapter six as a preliminary study, which provided a base for the main fieldwork. The empirical studies in chapter six and chapter seven were carried out to propose pragmatic frameworks (CMT Model-II and PKOT-Model-I) to address the identified problems for investigation in chapter seven. The key identified challenges in this research study are highlighted and discussed in the section below as outlined in the tabular account below (Table 1.1).

CHALLENGES	INVESTIGATIONS
1.9.1 A free flow of information (Channel Shift)	Innovative communication channels
1.9.2 Knowledge Sharing and staff support	Effective coordination strategy
1.9.3 Knowledge identification, integration and creation	Knowledge management
1.9.4 Collaboration and team efforts	Staff coordination
1.9.5 A willingness to achieve smartness	Level of motivation
1.9.6 Innovation for sustainable development	Learning and training

Table: 1.1 (Key Challenges of Problems for Investigation)
Source: Nasrullah Khilji (Resultant from Appendices: C-1 and D-1)

1.9.1 Innovative Communication Channels

The investigation takes various aspects of a problematic nature to observe how these can be ameliorated through attention to the processes of knowledge management. Since the mid-1990s, the UK local government has widely encouraged the use of ICTs in public services. The channel shift and emerging technologies are often considered as the fundamental essence of transformation in the better delivery of public services. ICTs are applied to respond to citizens' needs quicker and to decentralise public administration in order to enhance the local government ability to direct key projects (Prybutok et al, 2008).

The rapid growth of awareness in performance improvement has led to the much clearer definition of planning service standards. This is engaged in the setting for much clearer communication measures across most local authorities and in their service domains. The planning professionals are coming under increasing pressure as cuts to their budgets are impacting on their ability to make performance improvement. This raises further demand for ICT services in order to take cost out of other parts of the organisation (SOCITM, 2010).

The local authorities have been pressurized early on to reduce costs of their processes while at the same time improving service quality (Fleming, 2014). A new Kable report predicts local government spending on ICT projects will grow steadily in the years ahead driven by outsourcing, remote working and the shift to online systems. The local government spending on ICT projects will continue to grow and could hit £4 billion per year by 2016 (ITPRO, 2015). These developments have been given an added edge by being associated with market viability, compulsory competitiveness, best value, time efficiency and outsourcing initiatives.

It is a fact that the central government has time and again placed pressure on the local authorities to enhance the proportion of public services delivered electronically (Raynsford and Beecham, 2011). This suggests that there is considerable demand to investigate and develop better planning system frameworks. This can help the planning teams to improve service quality and concurrently to get efficiency in planning services and value for money. Innovative communication channels using ICT provide more functional communication processes, which can impact on service levels and performance. The UK local government launched the Knowledge Navigator project in January 2013 with the aim of helping local government to make better use of existing national investment to influence sustainable development (Thornton, 2014). The prospect for councils to be innovative is to provide the online locations by encouraging the use of apps to access data effectively (LGA, 2014).

To be successful organisations should aim to generate a portfolio of innovation projects which can then be evaluated, piloted, prototyped and tested. This means they will be capable to assess the viability and potential payback in terms of benefits and the likely level of risks (Thornton, 2014). The local communities are adopting the use of online services as the second nature of their transaction because in UK 82% of adults are online for shopping, banking, information and entertainment today. However, until now the local government services have stood out by their failure to keep up with the digital age. The local government has been slow to realise the benefits of the digital age. The councils need to be more agile, flexible and digital to deliver their services to achieve enhanced efficiency effectiveness (Maude, 2013).

1.9.2 Effective Coordination Strategy

A basic definition of coordination is the act of working together harmoniously (Nyman and Levitt, 2010). The act of working together in a team implies that planners perform interdependent activities, which are part of a sustainable plan. The predicate 'harmoniously' implies that emerging conflicts are resolved. This requires a purposive management process (van Aart, 2005). Effective coordination strategy permits development participants to perform complex composite tasks and achieve common goals by interaction (Leigh and Blakely, 2013).

The purpose of this research work is actually to examine an ICT integrated knowledge based planning system for greater understanding of quality service delivery. This study intends to provide planners with necessary evidence and guidance that would help them to compare and enhance their performance. Effective coordination strategy is neither new nor has this not been a central challenge for better delivery of public services using ICT tools. Since the mid-1990s, the role of ICT in the local government has grown constantly. Effective coordination strategy is one of many challenges that drive transformation in the planning system.

1.9.3 Integrated Knowledge Management

The UK local government is under serious pressure to improve public services delivery for sustainable development. Knowledge management is still at an early stage in the local government to play its part successfully. The desire to effectively manage knowledge across local authorities, demands an improved planning system and the implementation of online and innovative planning permission processes. The scale to which the local government effectively applies planning portal initiatives is the encouraging sign of transformation towards a future state. The local government planning system is continuously looking to gauge the benefits presented to them by knowledge management for better and improved public service delivery.

For large organisations like the local authorities, the performance of knowledge management is considered as a fundamental element in delivering better public

services. The UK local government has already recognised the importance of knowledge management in reviving and reformatting their planning system. However, KM is at the initial phase, which is considered as one of making it a crucial goal to achieve improvement. It is believed that the ability to successfully integrate knowledge across planning teams can lead to enhanced public service delivery and the achievement of best planning practices.

This research study investigates; how emerging technologies support the planning system and how knowledge management policies could be applied. This research work spotlights the current use of a range of electronic technologies implemented by local planning authorities. The local government is serious about promoting an open knowledge sharing organisational culture to improve their performance within internal and external environments. The UK local government recently introduced various performance measurement programmes to ensure that there is an efficient and effective local government planning system for sustainable and continued economic development. The local government has identified the enhancement of public service delivery as a key strategic power in the economic motivation package in order to influence against the effects of economic downturn.

1.9.4 Staff Coordination

Underscoring the role of knowledge management in the planning system is the basis through which it is possible to control, evaluate and further improve the system. This research study is inspecting how knowledge management can be introduced into the local government by incorporating both technology and human/social resources. It is generally proposed to assess that how knowledge management performs its role in the improved operation and service delivery through staff coordination. It is also imperative to examine what kind and level of knowledge already exists among the planning support teams and how they identify, share and manage their expertise. Some local authorities use various performance measurements and statistical tools to scale the impact of knowledge management particularly in the context of explicit and tacit categories.

Staff coordination to influence the operations of public services is possible by getting people involved in positive changes. Knowledge based practical applications help them to sharpen personal management, communication, delegation, motivation, and decision-making skills (Denhardt, 2009). It is challenging to assess how knowledge management shows an absolute correlation between a knowledge application and the performance improvement outcome. According to the process classification framework report (Lemons, 2011), it is important that assessment metrics need to be developed for the purpose of continuous improvement. It is essential to have a number of tools and resources available to determine the effectiveness and value of knowledge management activities in staff coordination.

1.9.5 Level of Motivation

It is a challenging problem to keep motivation levels high among staff for identifying and sharing the right expertise among team members when they need to. The level of staff motivation to share and manage knowledge for the most appropriate line of actions requires team members to be motivated to share their experience and expertise. A baseline is required to be established, against which performance may be easily measured during the application of knowledge management within the planning system (Hoss and Schlussel, 2009).

In the United Kingdom, the planning permission process is undertaken by the local authorities that generally engages a multifaceted method. The process of examining the planning application requires various levels of decision making, which requires staff coordination. This allows the proposed development to be properly validated by the relevant decision making authority before a planning permission is granted. The Planning Portal is the evolution of the World Wide Web, an internet based planning source to enable users to process planning application online. This is the advancement in understanding the innovation and integration between human and technological resources. The knowledge based planning system is the next level of technological integration that demands stakeholders to have a high level of staff coordination and motivation.

The proposed research empirical frameworks (CMT Model-I and CMT Model-II) reflect the key research propositions and researcher's fundamental hypothesis. This research conceptual model addresses the problems for investigation by sketching a fundamental basis with innovative communication channels, effective coordination strategy and integrated knowledge management. It is challenging for the local authorities to motivate the transfer of right knowledge to the right people at the right time. However the information needs to be translated into action to improve the organisational performance (O'Dell and Grayson, 1997).

1.9.6 Learning and Training

The human resource plays an important role to articulate the rationale behind the knowledge management (intellectual asset) benefits in the planning system. The human resource role is indeed a crucial requirement for an efficient planning process before deciding on a course of action to effectively shape the knowledge management. As a knowledge facilitator, the human resource needs to ensure alignment among fundamental organisational objectives, statement of ethics and policies. A culture that embraces getting the right information to the right people at the right time for the right reasons needs leadership vision to promote knowledge management. This is required to promote and support an open knowledge and learning corporate culture in pursuing lessons learnt and continuous staff training.

The learning and training policy is the key challenge for local authorities that also need to be investigated in this study. The planning staff equipped with appropriate skills and capabilities, play a crucial role in delivering quality planning services. This issue needs to be addressed by identifying key supportive and preventives factors for both tacit and explicit knowledge domains. Human resources can be better integrated, if the learning organisational culture is developed in local government.

Human resource management has the capabilities for creating, measuring, and reinforcing a knowledge sharing environment. Learning and training therefore provides a helping podium in encouraging staff conversations during working hours

for socialisation and better use of calm working hours. Conversation and discussion from lessons learnt among staff is considered as the key device of knowledge sharing culture. Staff training can play an important role to manage social media channels including e-mail, instant messenger, internet surfing and similar uses of technology. Clearly, the learning and training has a role in generating and disseminating knowledge. Learning and training is one of the main problems that also needs consideration as a critical area of investigative objectives in this study.

1.10 Research Purpose: Knowledge Management

Knowledge management is the process through which the local authorities generate value from their intellectual assets. Most often, generating value from intellectual capital involves codifying what employees, partners and applicants know and sharing that information among planners, sub units and even with other cross departments in an effort to devise best planning practices. The research study is about an integrated knowledge based planning system to answer the research key question and objectives. The three main research propositions are assessed to develop the pragmatic framework (see CMT Model-I in chapter five (Ch-5) and CMT Model-II in chapter six (Ch-6)). The research framework is derived from CMT Models (see for detail chapter five and chapter six). The preliminary research framework is illustrated below (Figure 1.6).

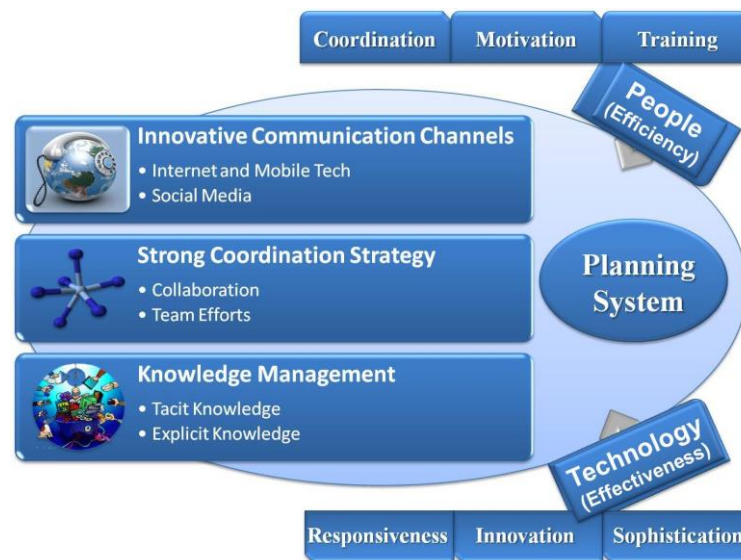


Figure: 1.6 (Researcher Motivation is Based on Three Fundamental Research Propositions)

Source: Nasrullah Khilji (Resultant from Figure 5.7 and Figure 6.4)

- **Innovative Communication Channels**

(Identifying and capturing knowledge as part of the planning system).

- **Effective Coordination Strategy**

(Sharing and transferring knowledge in a manner that enables data retrieval).

- **Integrated Knowledge Management**

(Creating and recapturing knowledge on demand in real time and in a format that is relevant to the strategic planning decision making).

Knowledge management in the planning system is actually an enhanced and modified version of management information systems (Khilji and Roberts, 2014). Knowledge management is a conscious strategy for moving the right knowledge to the right people at the right time to assist sharing and enabling the information to be translated into action to improve the organisational performance (O'Dell and Grayson, 1997; Morphet, 2008; Dalkir, 2014). In the age of technology where knowledge performs its part as a key strategic apparatus in the planning system context, there is an opportunity for local government within KM. An integrated knowledge based planning system enhances the capability of planners to endorse smart and sustainable development.

1.11 Methodological Approach

The research design approach was a combination of both qualitative and quantitative methods to assess knowledge management in the UK local government. The field data was collected by conducting interviews, questionnaires and case study while data analysis was done by making a data comparison. The main reason behind using multiple research methods was to improve the probability for greater validity and reliability in result interpretation during data analysis. The research design takes the preferred high level approach with two vital components i.e. people and technology.

The mixed methodological approach was applied in this research study to analyse the influences of knowledge management in the UK local government planning system. The research methodology was applied in three perspectives; innovative communication channels, effective coordination strategy and integrated knowledge management. This

research study was also conducted within the conceptual frameworks such as Ikujiro Nonaka and Hirotaka Takeuchi proposed SECI-Model (1995). The theoretical and conceptual models were evaluated to understand the dynamic nature of knowledge creation within planning process during preliminary study 'see chapter five (Ch-5)'. This research also carries out case study within five participating local authorities to examine the transformation of planning system 'see chapter six (Ch-6)'.

1.12 An Overview of Research Aims

The main goal of this research study is to review the role of knowledge management in the local government planning system. The research question was derived from this goal: *'what role does an integrated knowledge based planning system play to achieve enhanced and sustainable development within the UK local authorities?'* The research question can be dissolved into a further set of research aims. This research indeed incorporates conceptual modelling and empirical study to address the key identified research aims by carrying out the following steps:

- Conducting an extensive literature review to grasp the UK local government ICT strategy towards KM policies in context of planning system transformation.
- Carrying out theoretical and conceptual models' assessment during preliminary study to gather initial insights about key factors that influence an integrated knowledge based planning system.
- Developing an initial framework to analyse the transformation of planning system from 'As-Was' to 'As-Is' from literature review and preliminary study.
- Identifying key supportive and preventive elements that affect the technologically integrated knowledge based planning system with both main and sub coding.
- Conducting further fieldwork using mixed methods including interviews and questionnaires to review ICT strategy and planning portal online services.
- Carrying out a case study to critically analyse the innovative communication channels, effective coordination strategy and integrated knowledge management.
- Reviewing the supportive and preventive elements that are faced by participating local authorities to address the key challenges they face or may face in future.

- Examining the local authority's approaches to overcome the key barriers in their planning application processes by reviewing their ICT strategies and KM policies.
- Analysing the research results and key findings by applying evaluation approach and using common technical facts to ensure the validity of research findings.
- Modifying the empirical framework to analyse the planning system transformation from 'As-Is' to 'To-Be; state based on the data collection and analysis.
- Discussing and concluding the research outcomes to make recommendation for future further research.

1.13 Key Research Objectives

Subsequently, this research study has gone on to explore and analyse the key research objectives to answer the research question (see chapter five 'section 5.6' for detailed empirical elaboration):

1. To investigate information systems and information management practices of the UK local authority's planning system to determine how they shape knowledge for sustainable development.
2. To assess the nature of the socio-technical system in the local authority's planning system and how this system supports various roles through its constituent elements (business needs, human resources, IT and socio-organizational communication) that could affect the sustainable development.
3. To examine the extent to which the internal management of data and information contribute to the effective management of knowledge in planning department.
4. To study the links between the internal information and knowledge environment with the external knowledge environments of key stakeholders to assess how they affect sustainable development.
5. To investigate the balancing of internal and external interests in the planning system in terms of the actual and potential roles for knowledge management.
6. To evaluate the implication of study findings for managing knowledge in the planning process where reciprocity, mutuality and sustainability are the key drivers of the outcomes.

1.14 Summary of Thesis Structure

The primary aim of this research study is to assess and audit the impact of knowledge management on the human resources' efficiency and technological resources' effectiveness as a hybrid socio-technical planning system. The case study data analysis from the fieldwork presents a framework for the dynamic nature of knowledge in order to propose an integrated knowledge based planning system. This thesis is divided into four parts (Background, Method, Fieldwork and Outcome) comprising of ten chapters as described below and graphically illustrated in the following diagram (Figure 1.7).

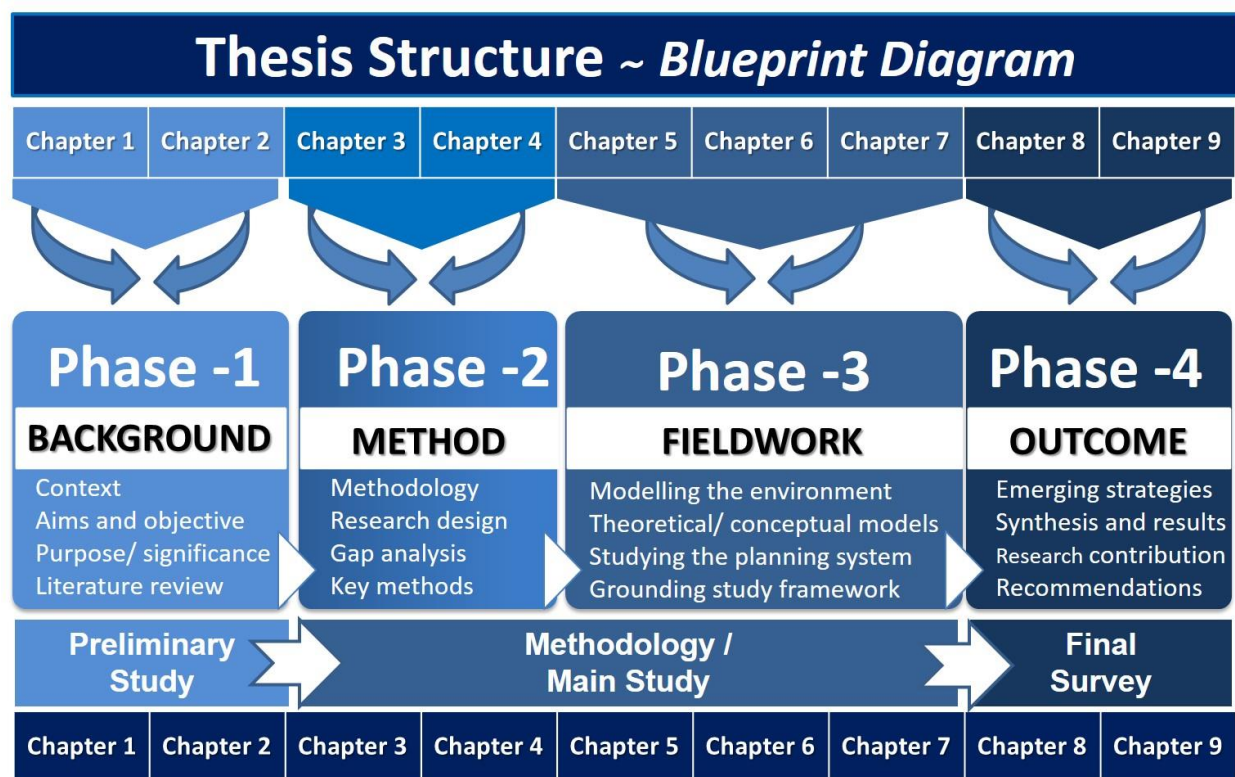


Figure: 1.7 (Blueprint Illustrating the Structure and Layout of Thesis)

Source: Nasrullah Khilji

1.14.1 Part – I: Background

The first part of this research thesis is comprised of two chapters (Ch-1 and Ch-2) to provide the background and to talk about the need and significance of conducting this research study. The chapter one (Ch-1) gives the background and overview of this research study, describing how this study takes place and why it is important to conduct this research study. This chapter elaborates the problem for investigations in

order to audit knowledge management and its impact on human and technological resources that have the vital significance within the UK local government planning system. The chapter two (Ch-2) presents the review of the literatures to identify research gap while providing a ground for key methods and fieldwork

1.14.2 Part – II: Method

The second part of thesis provides research methodology and methods, which consists of chapter three and chapter four (Ch-3 and Ch-4). The research methodology is explained in the chapter three (Ch-3), while the chapter four (Ch-4) is about research methods by describing mixed approaches in data collection and analysis. The chapter four reports the field study with vital research data collection.

1.14.3 Part – III: Fieldwork

The third part of thesis is about the actual fieldwork (practically collecting, analysing and synthesising conceptual and empirical data). This part is comprised of three important fieldwork chapters (Ch-5, Ch-6 and Ch-7). The chapter five (Ch-5) argues and explains an exploratory process modelling preliminary study to provide a background to identify and examine supportive and preventive knowledge factors of both tacit and explicit knowledge domains in the perspective of an integrated knowledge based planning system (Process Modelling).

The chapter six (Ch-6) provides the case studies to show evidence collected from participating local authorities during the fieldwork. In this chapter the researcher explains how an integrated knowledge based planning system would lead the planning system toward smartness and sustainable development.

The data outcomes, research results and data synthesis is done in the chapter seven (Ch-7) in order to evaluate the case studies evidence. The researcher in this chapter also synthesized the supportive and preventive knowledge factors for both tacit and explicit domains. It also highlights what research results can be brought forward to build recommendations.

1.14.4 Part – IV: Outcomes

The fourth part of thesis is about the research results, evaluation of field evidences, discussion, conclusion and recommendations. This is the final part of thesis comprised of two chapters (Ch-8 and Ch-9). In chapter eight (Ch-8), the various practices adopted to ensure the quality and diligence of the research results are discussed to validate the proposed research framework.

In chapter nine (Ch-9), thesis is concluded by reflections on the findings and briefly reviewing the research journey from the beginning until the end. The research implications and key recommendations for future research are presented in this concluding chapter.

This research study contributes by categorizing a set of supportive and preventive knowledge elements in order to achieve an improved and integrated knowledge based planning system. The key supportive and preventive knowledge factors identified in this study are *vision, strategy, leadership, public demand and financial resources* as enablers while *political, social, economic, technological, environmental and legal challenges* are classified as major hinderers (see for detail chapter five 'section 5.5'). The key supportive and preventive knowledge elements are classified in perspective of knowledge management within the UK local government towards their smart and sustainable development.

The group of supportive knowledge elements are found beneficial as key enablers in the application of knowledge management in planning system. However, the group of preventive factors are observed unhelpful agents as major hinderers. The identified supportive and preventive factors were evaluated in context of an integrate knowledge based planning system (see Figure 5.11). This analysis helped to justify the impact and crucial role of such knowledge elements in the transformation of planning system from current 'As-Is' to future 'To-Be' state (see for detail Figure 7.3).

1.15 Chapter Summary

The purpose of this chapter (Ch-1) is to highlight the research gap and the need to conduct this study. The research background is presented with concise preface of the UK local government planning system to justify the need for this research study. A rapid review of an integrated knowledge based planning system is revealed by highlighting the development and implementation of proposed pragmatic framework. A significant theme for research inquiry is discussed followed by genesis of interest, solutions for identified problems and key research objectives. The research contextualised influences in the fieldwork are discussed to justify the purpose of this study. This chapter is concluded by highlighting the content, structure and organisation in thesis arrangement and presentation based on the identified aims, objectives and research question. The blueprint of the thesis is outlined before starting the next chapter (Ch-2), which will analyse the literature review to achieve state of knowledge and influences.

CHAPTER 2**STATE OF KNOWLEDGE
AND INFLUENCES**

Chapter two (Ch-2) provides an overview of the theoretical and conceptual work on ‘the role of KM and ICTs towards enhanced efficiency and effectiveness in the planning system’. The literature review in this chapter was required to scope out the key data collection needs to conduct suitable fieldwork.

2.0 The Literature Review Process

The literature review is an essential practice to examine the relevant work published in reports, documents, books and research journals. The literature review process was carried out in this study with the help of key phrases: planning system, ICT strategy, local government reform, innovative communication channels, effective coordination strategy, knowledge management, efficiency and effectiveness, sustainable development, stakeholders' participation, planning system, socio-technical system and planning portal. The literature review process was helpful to bring pertinent authors', journals', conferences', local authorities' and their suppliers' work to the researcher's attention.

A review of prior and relevant literature is an important feature of any academic research that plays a scientific role in framing the research approach and strategy (Easterby-Smith et al., 2002). The thematic reviews of literature were organised around the main research topics. However, the chronological progression of time was also considered as a significant factor within the thematic approach. The thematic reviews was used in this study to clearly identify main and sub topics to present an appropriate scheme of discussion relate to each other with rational argument, critical scrutiny, logical agreement or disagreement.

In the literature review process, the researcher identified relevant publications, articles and documents to read in detail from diverse sources: LGA, SOCITM, INLOGOV, DCLG, LACORS, DBIS, 4ps, TCPA, RTPI, PAS, IDeA, DirectGov, info4local, RIEPs amongst others. The researcher also reviewed research journals, conference proceedings and the UK government surveys and public online reports. In the process of literature review, researcher viewed monographs on the planning system, e-governance, ICT strategy, reformation in local government and knowledge management. An effective literature review creates a firm foundation for advancing knowledge (Pan, 2003). It facilitates theory development, closes areas where an excess of research exists areas where research is needed (Machi and McEvoy, 2012). The literature review structure is presented in the graphical illustration below (Figure 2.1).



Figure: 2.1 (Outline of Literature Review 'Chapter-2': State of Knowledge and Influences).

Source: Nasrullah K. Khilji

2.1 The Free Flow of Information: The Benchmark

The UK local government planning system is well established and all pervasive with its origins in post-war reconstruction and the Town and Country Planning Act 1947. The local government planning system is the base for physical and geographical spatial planning and sustainability development (Cullingworth and Nadin, 2006). The UK town and country planning system shapes new building and infrastructure all over the country. It can protect the countryside from sprawl and it gives everyone a chance to have their say (Rydin, 2011). The local government planning system in the UK requires strategic foresight, clarity of mission, means of delivery, regulation, monitoring and above all accountability, transparency and a democratic setting for sustainable development (Allmendinger, 2009; Belanger and Hiller, 2006).

The local government planning system is an essential part of national economic growth and sustainable development. The local government planning system in UK operates in a complex and rich environment involving technical system, organisation culture, political drive, social dynamic and people. The existing planning legislation for England and Wales was consolidated by the Town and Country Planning Act 1990 (Henderson, 2011). The planning system presents an environment in which the ability to efficiently and effectively manage data, to encourage free flow of information and to establish innovative channel shift are likely to be at a high demand within councils (NPPF, 2012).

The UK local government planning system requires an ongoing process of standardisation and simplification for improved information sharing. It is therefore desirable for to develop a common infrastructure composition to enable local delivery suited to local requirements. The UK public services have moved online drastically since 1994, when the Cabinet Office announced that all central government and agency websites would be routed through *www.open.gov.uk*. Since then, the use of technology to deliver superior planning services has adapted and developed in a way that could never have been foreseen before the mid-1990s (HM Government, 2010). There are differences in the adoption and implementation of e-government within several government organisations at the local, national and international level (Ho, 2002; Kennington, 2002; Heeks, 2003; McInerney and Day, 2010).

Hence, the local government is today challenged with developing a free flow of information (channel shift) enterprise architecture that links technology driven services to the local authorities' mission (Kubicek, et al., 2011). They face growing pressure to serve citizens electronically and demonstrate value to the public in terms of effectiveness, cost and efficiency (Norris and Moon, 2005). As a result, e-government has been known as one of the key initiatives for local authorities. With the help of e-government strategies, local authorities increase their productivity, gain a competitive advantage and reduce the gap among various units and agencies (Davenport and Prusak, 2000; Whitson and Davis, 2001; Hall, 2002; Henman, 2010; Lietaer and Boik, 2012; Sheppard and Smith, 2013).

The identified research gap could be attributed to the individual council's requirements, circumstances, readiness, structure, size and cultures (Kohl, and Depner, 2010). The local government's representatives basically serve as a means of information and communication; conveying the demands, requirements and views of the people and also providing feedback between local government and the public they represent (Evans and Yen, 2005). The current coalition government in UK desires that the local authorities might include mechanisms to foster the people's participation through their representatives. They might include assembly members, councillors and other people they have elected to make decisions in the public interest. A free flow of information empowers communities to get control over the services that are delivered in their areas, this can inspire a new spirit of civic pride in local communities (Sear *et al.*, 2011).

2.1.1 The UK Local Government

The United Kingdom representative democracy has four levels of government comprising of national, regional, local and community. Generally the national government develops new legislation, guides lower levels of government and provides national services, such as defence, foreign policy and social security. The UK devolved administration is the regional responsible bodies comprise those of health, education, housing, social work, sport, arts, tourism, economic development and the local government (Wilson and Game, 2011).

The local authority is indeed the closest government agency to the public in UK. Its responsibility is not only accommodating the public with variety of services and basic facilities but it also acts as a development control in the urban development process. The Town and Country Planning Act, has given powers to the local government to undertake local planning authority for sustainability development (Scott, 2010). In UK the local government today comprises 433 local authorities including 375 Councils in England and Wales, with almost 21,000 elected councillors (LGG, 2010).

In UK the local government derives its power from a variety of Acts of Parliament. The local authorities are required under law to deliver the functions and services to local communities as prescribed in legislation within the local area of control. The local government basically delivers a range of non-statutory functions, which are discretionary to implement local plans and try to make them workable for sustainable development. The local government is a key player in the regional planning process as decision maker and also as service provider (King and Cotterill, 2007).

2.1.2 The Planning System

The local government planning system is basically a management process to anticipate the future state and makes resources available to bridge the identified gap in order to achieve the desired future state. The planning system is one of the key delivery agents that allow making a positive difference to the problems of climate change and all other today's global issues. The UK Town and Country Planning shape new building all over the country. It can protect the countryside from sprawl and it gives everyone a chance to have their say (Planning Help, 2010).

The planning system in reality facilitates communities to promote their various plans for sustainability development. In current days with the technological revolution, there are some opportunities and complications created by the spread of settlements and relocation of activities that guide planners about the new practices of planning system. ICTs draw a picture about the role and responsibilities of central as well as local government; today politicians are involved as are the public pressure groups,

developers and many others in the planning process (Land, 2010). A local planning system is required to underpin public desires to improve productivity by being capable of reaching a proper balance between citizens' need for economic development and for thriving communities (Hargreaves, 2011).

Internal and external communications for information management have long been problematic and challenging for the local government since long. It is also observed that the planning system operation is one area where the needs and requirements for information system might be regarded as particularly intense. Professional bodies such as the Royal Town Planning Institute, Royal Institution of British Architects and the Town and Country Planning Association are guardians and advocates of the process, possibilities and policies. Decision making can be improved by using planning system to reduce uncertainty. A free flow of Information can be used to influence decision behaviour (O'Brien and Marakas, 2011).

The successful implementation of effective planning system is principally dependent on number of factors including the efficient operation of human resources. Furthermore, the literature review and recent research indicates that intellectual property and intangible resources can be utilised better. The local authorities are considering knowledge management policies to leverage their human resources with enhanced capabilities (Bertucci, 2007). A free flow of information in planning system updates individuals and organisations by making visible previously concealed parts of planning processes (McInerney and Day, 2010).

2.1.3 The Planning Information System

The planning information system at local government provides comprehensive and interactive platform with essential technologies and information applications. The planning information system has impact on development and decision making in an exciting and collaborative manner (MKC, 2010). The UK local government wants people to be involved and consulted within the planning system. The interesting question raised here is how would people feel and find it that their involvement

cannot be ignored. For democratic process it is not fair if people do not know exactly what opportunities there are for their participation at regional level. The roles played by planning information system can be classified into three types: automate, informate and transform (Michels and De Graaf, 2010).

The local authorities have automated many operations that used to be performed manually by replacing expensive manpower with advanced information technologies. Information system also improves operational efficiency through the enhanced organisational ability of information processing. Information system improves an organisation's ability to link and enable organisational members, build codified knowledge bases and improve boundary spanning capabilities (Dewett and Jones, 2001). There are opportunities to review the scope of system thinking and practice to deal with information society related issues (Rodrigo and Pachon, 2009).

2.1.4 Strategic Development of Planning System

The UK local government develops and continuously reforms its ICT strategies with both information and knowledge management practices. The planning system activities require to comprise integration of emerging technologies into functional and operational maintenance for continuous reformation. The human interaction with ICTs and the associated information processing activities usually take several diverse forms. The strategic development of planning system happens to make sure that things get built in the right place and to stop the wrong things getting built (Planning Application, 2011).

The strategic development of planning system ensures that the new development plans and building designs are assured for an appropriate location. In theory, the system helps to plan for developing the national needs, while protecting the natural and manmade environment. It is meant to ensure developments are 'sustainable' in other words, that planning decisions will not damage the environment for future generations (Rogers et al., 2008). The 2006 local government white paper highlighted the important role about local information systems in improving decision

making and targeting service delivery (Foley et al., 2007). This means that the right planning in good time makes development faster and better with the most appropriate characteristics for smartness and sustainability growth.

In the planning system at local government level, key stakeholders can get involved in a cycle of planning and development projects with the implementation of internet based online strategies. Although, there is no consensus found during this literature review regarding the success rates of internet based planning systems implementation (Hong and Kim, 2002). According to some current research studies, the success rate of internet based services has been fairly low with respect to a diversity of assessment criteria, such as on time and on budget project completion, system match with functional requirements and cancellation rates (Barddzki and Reid, 2012). The local authorities that are serious on their performance improvement are more likely to enhance better services to local people, to concentrate on the services that matter most, and are quick to identify problems and find customer oriented solutions (Legris et al., 2003 and De Groot, 2005).

Knowledge management, web based services, mobile apps, and other technological applications are clearly in the minds of many at local planning and development setup. There is evidence for an increased commitment to invest in the area of ICTs for faster and better planning system. This research study indicates that intellectual assets can be utilised much more efficiently if local authorities apply knowledge management techniques for leveraging their human resources and enhancing their personnel management performance (Soliman and Spooner, 2000).

According to an online SOCITM (2012) article, *‘the council’s main asset will be its information, which it manages effectively and makes appropriate information available seamlessly and securely to the employees who need it’*. In future the planning staff will increasingly work offsite and out of office, which for some staff could be anywhere, not necessarily close to the local council area (Elliott, 2012). ICT resources will be much more adaptable than at present, with cloud computing

enabling the council to select the applications it needs in a flexible way, and to ‘pay as you go’ for access to them (iGovnews, 2011). For example, the iGovenews article on ICT, shows more people accessing government information online than ever before because the government has made its services easier and faster through technology such as GOV.UK (GreenBiz, 2014).

2.2 Innovative Communication Channels

The term, ‘*Information and Communications Technology*’ is an umbrella term that covers innovative communication devices as well as communication channels. Innovative communication channels include radio, television, cellular phones, computer and VoIP along with networking, Apps, hardware, software and satellite systems etc. This is including various services and ICT applications, such as social networking, videoconferencing and distance learning (ICT, 2011). The e-government term is applied to describe the use of information and communication technologies in the local authorities. In simple words, e-governance is the means by which the modernization of public services can be accomplished as well as an approach to make planning system more transparent (Trajkovik et al., 2011). For local authorities, it is the preferred way to modify their processes through the use of information and communication technologies in search of better practices, greater control and transparency (Jewell, 2010).

The UK local government fully understands and encourages the engagement of innovative communication channels in the local government planning system. An ICT research publication has reported, ‘*by 2020 industries enabled with information and communication technologies would be capable to cut carbon emissions five times more than even the entire ICT sector itself*’ (Karam, 2010). SOCITM President Jos Creese spoke about the ICTs challenges and opportunities during the national conference in his address, he says, ‘*recession, climate change, coalition government, financial austerity, public services need to reform, collaborate and innovate as never before*’ (Creese, 2010). Innovative communication channels are likely to be the cornerstone, forming vital information systems, modernising services, enabling efficiency to radically change public services with strategic development of E-Government (Shareef et al., 2011).

2.2.1 The Local Government ICT Strategy

The local authorities play a central role in sustainable development in each region of Britain, although there are numerous technological challenges. One of the key challenges is the appropriate use of ICTs to collect, use, store, retrieve and disseminate information in planning system (Shark, 2012). The local authorities now very much rely on electronic data interchange to ensure productivity in the planning system for sustainable development. The central government inspired ICT strategies affecting the whole of the public sector; the public services network, the government's code of connection, the changes to data protection regulations, the government approach to new social media 'e.g. *twitter, blogs, face book etc.*' are all continuing to change the public sector working environment (Trajkovik, 2011).

Looking ahead to the next five to ten years many local authorities predict and foresee the emergence of innovative systems with cloud computing services (ICT Strategy, 2011). In today's world, widespread change in business and technology creates a dynamic and chaotic work environment, pushing intelligent use of information and communication technologies to survive (Strategic ICT, 2012). The publication of 'Information and Communication Technologies Management in Turbulent Business Environments' informs today's business managers of important ICT strategy in changing business environments, techniques for effective ICT development, and ICT challenges for the future (Koh and Maguire, 2009).

ICT is an important component of the corporate strategy and has a positive role to play in transforming the council services (Luyt, 2006). ICT makes easy and reliable to access and use council services online, as it is to phone or visit the council by person. The local government wants citizens to have maximum of their enquiries resolved at their first point of contact. It will not matter whether they contact by phone, e-mail or by visiting the council, as they will receive a fast, effective and consistent service (Ferrier and Lloyd, 2009). A unique case number, which will enable customer to track the progress of their enquiry online either by using the council's portal or by receiving SMS updates to their mobile through the council's CRM (Highland Council, 2013).

2.2.2 The Place of ICTs' in the Planning Process

Information and Communication Technologies support a range of activities that can process, store, manipulate, transmit or retrieve information in electronic form. ICTs' play a crucial role in planning system these days encompassing personal computers, digital television, internet and robotics such as planning portal. The planning portal is the local government's online facility for planning processes to deliver e-services. The planning portal provides facilities for planning permission online as well as submits and tracks an appeal remotely (Planning Portal, 2010). The planning portal is becoming the definitive source for the local government planning processes online.

The local government introduces new planning processes from time to time; however, it is not possible for them to manage and control great quantities of highly complex data without ICT tools (Zarnekow et al., 2006). The planning and regulatory services online (PARSOL) was initiated in UK for the local councils as an e-Government national project (PARSOL, 2009). The major role of ICTs in the local government planning system is graphically illustrated by PARSOL as shown below (Figure 2.2).



Figure: 2.2 (Role of ICTs in Local Planning Process)

Source: Adopted from PARSOL, 2009

Innovative communication channels need further investigation to examine, how emerging technologies contribute to enhance efficiency and effectiveness in planning system for sustainable development. The traditional planning system has been transformed from 'As-Was' to 'As-Is' state as a result of ongoing reformation through emphasis on the information basis to achieve sustainable development. To move forward towards smart and sustainable development as a future 'To-Be' state, the planning system demands further innovation in ICT strategies (Markovski and Gusev, 2013). Earlier, information was distributed through a hierarchy, now information flows horizontally and is hardly controllable (Zimmermann and Finger, 2005). The successful implementation of ICTs in the local government planning system is reliant on being able to cope with the overall design and topology of systems. It is also depended upon planning system interfaces within local council, stakeholders and the relationships with external environment (Torres et al., 2005).

2.2.3 Information-led Reforms in the Planning Process

The technological advancements have created a new form of urban planning referred to as e-planning, which incorporates the traditional elements of urban planning with information and communication technologies (Silva, 2010). The local authorities are expected to reduce costs, increase productivity, drive reforms and help the business identify and pursue new business opportunities (Roberts, 2011). The Killian Pretty review report was presented in 2008 to identify opportunities for improvement at every stage of the planning process, for the benefit of both users and operators. Many of the Killian Pretty report's recommendations build on work already in progress. The local government is determined to pursue the identified issues rigorously and in particular to ensure that the best use is made of information technology to maximise efficiencies and make the planning system easier to use (Pretty and Killian, 2009).

According to the SOCITM 2009 article, 'in 1997 the Prime Minister Tony Blair announced that a quarter of government services would be delivered electronically in the next five years. This statement referred to Central Government Services', but it

was also expected that local government would follow some uniformity. One of the parliament members responded in her statement, *‘effectively utilised, ICT can have a massive impact on the way councils conduct their business. It can enable quicker and cheaper communication between councils and the people they serve. It can facilitate access to services by local people’* (SOCITM, 2009). As an integral aspect of organisations’ efforts to innovate with ICT, learning helps organisations acquire the knowledge necessary for deploying new technologies (Trajkovic et al., 2011).

Many organisations during the 1990s started using Enterprise Resource Planning (ERP) as a system to enhance their resource planning with efficiency but did not give enough attention to make it integrated within planning system. Many local authorities, despite paying millions of dollars on software and services, found out that implementing ERP is still extremely difficult, and that they do not have sufficient capabilities to implement and operate it (Davenport, 1998). In the planning system reforms it is not only ICTs to be totally dependent upon for efficiency and effectiveness. The best strategy is to integrate ICTs with human resources in the planning system, which is discussed in the later chapters (Ch-6 and Ch-7) in detail.

2.3 Knowledge Sharing and Staff Support

Knowledge management is one of the contemporary management disciplines employed by organisations for continuous improvement. Its purpose is to capture and store workers’ knowledge in order to improve the organisation’s competitive advantage (Satterlee, 2006). Just like knowledge itself, knowledge management is difficult to define as it is defined in various perspectives by different experts, theorist, academia and authors. Bill Gates suggests that knowledge management is often defined as anything someone wants it to be but it is not a software or to do anything with technology. The Microsoft definition of KM is simple and clear: *“managing information flow, getting the right information to the right people so they can act on it quickly”* (Call, 2005), which is aligned to this research study.

There is an increase publication of books, articles and special issues on knowledge management since 1990s, which shows the importance of KM and knowledge workers. Peter Drucker (1996) was the first to coin the term knowledge worker. Organisation can learn from past experiences stored in corporate memory systems (Senge, 1990). Nonaka and Takeuchi (1995) studied how knowledge is produced, used, and diffused within organisations and how such knowledge contributed to the diffusion of innovation. Number of organisations, perceiving the value and success of measuring intellectual assets, recognize the growing importance of organisational knowledge as a competitive asset (Sveiby, 1996; Davenport and Prusak, 2000; Collison and Parcell, 2004; Hamel, 2007; Hislop, 2009; O'Dell and Hubert, 2011; Jennex and Bartczak, 2013).

2.3.1 Data, Information and Knowledge

Knowledge management is attracting lot of attention in the world of research and development, predominantly in the last two decades. From the UK local government planning system perspective, it is at an embryonic stage and yet has not entered into a mature form. There is not enough wealth of sources that can provide enough wisdom in terms of defining what knowledge management in reality is, and how it is differentiated from data and information (UNDP, 2008). Knowledge is indeed the contextualized form of information with deep and extensive meaning. Knowledge is a fluid mix of framed experience, values, contextual information and expert insight that provides a framework for evaluating and incorporating new experiences and information (Davenport and Prusak, 1998).

Knowledge management is the continuum that processes phenomenon, data, information, knowledge, expertise and wisdom. The definition of knowledge ranges from practical to the conceptual to the philosophical and from narrow to broad in scope (Leonard et al., 2014). Knowledge is the relation between information and its application based on experience, observation, wisdom, belief, norms, action etc. Knowledge is embodied in humans as the capacity to understand, explain and negotiate concepts, actions and intentions (Albrechtsen, 2007). Knowledge can be managed within the organisations in which we work as intellectual capital using social media to create new Knowledge (Hislop, 2013).

2.3.2 The Knowledge Management Concept in Practice

Knowledge is usually unstructured and dynamic by nature; the simple analogy is the melting ice. When ice starts melting it transforms its status from solid to liquid while keeping and maintaining all other attributes and characteristics. Water easily transforms its shape and adopts various forms as per the need of various circumstances. Knowledge is dynamic and changes its form as per the requirements of various situations. KM is a conscious strategy for moving the right knowledge to the right people at the right time to assist sharing and enabling the information to be translated into action to improve organisation's performance (Bouwman et al., 2005).

Knowledge management emphasizes how organisations would enhance their competitive advantage in practice through effective utilization of their intellectual assets. This is to be achieved by allowing free flow of knowledge across organisations (Corbin and Strauss, 2008). Through improved knowledge sharing and knowledge creation, flexibility and innovation should be enhanced (Krogh and Nonaka, 2000). Knowledge representation is the formal description of the knowledge with symbolic encoding, which deals with how to organize and encode knowledge in the best form so that the problem can be easily identified and solved (Shehab and Abdalla, 2006; Khilji and Roberts, 2013).

2.3.3 Local Government Readiness for KM

A knowledge management concept is an advanced practice of MIS that is still at an embryonic stage in local government. Knowledge originates in individual minds but is often embedded in organisational routines, processes, practices, systems, software and norms (Tiwana, 2002). The relationship between data and information is exactly the same as it is between concept and knowledge. The information system basically processes data and converts it into a useful form of information while in the knowledge system ideas are processed to make them applicable in various planning processes. Sharing knowledge between people working in an organisation is a complex and difficult task (O'Donnell, 2009).

Knowledge includes the concepts, ideas and information held in planners' heads. This makes knowledge management quite different than simply managing information for local planning authorities. KM is about the leveraging of planners' expertise with information and communication technologies, which represents and deliver knowledge across the local government. Knowledge Management System (KMS) contains the technology component of facilities, integration of information, application and management of knowledge (Russell, 2012).

What is new about attitudes towards knowledge today is the recognition of the need to harness, manage and use ideas like any other organizational asset. In the information age knowledge rather than physical assets is the key to competitiveness. This has highlighted not only an appropriate systems but also how to account for knowledge management in the balance sheet (Watson, 2003). From the research field data analysis, it is discovered that either planning support services at local government is currently involved in or planning system to be involved in KM processes (Altameem et al., 2006). The amalgamation of major knowledge management characteristics to enhance planning system is graphically illustrated below (Figure 2.3).

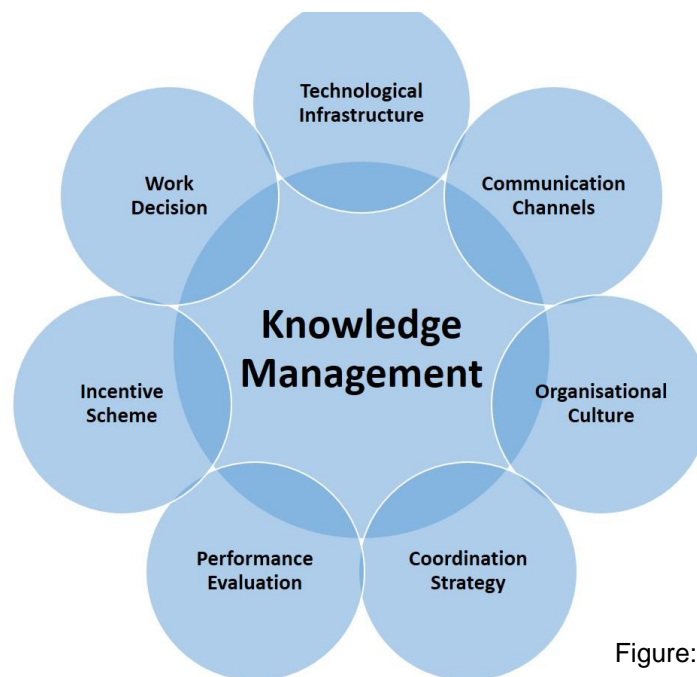


Figure: 2.3 (KM Amalgamation)

Source: Adopted from Altameem et al., 2007

The governing drivers for the successful implementation of knowledge management in planning system are dependent on vision, strategy, funding, citizen-centric, top management support and leadership interest (Altameem et al., 2007). This is debated that such factors influence council's decisions to adopt KM initiatives. Moreover, these factors can assist or limit the public sector's effort to diffuse KM initiatives. Melin and Axelsson (2009) report on several sets of such factors, for example, top management commitment, linkage to business, technical alignment, knowledge workers and user involvement. Bettahar et al., (2009), Carter and Belanger (2005), and Oakford and Williams (2011) also pointed out the need to involve the knowledge users as essential for a sustainable development.

2.3.4 KM in the Planning System

Knowledge management in the UK local government planning system is at an embryonic stage, although the local government staff involved in the planning system are assumed to be able to understand, share and manage knowledge. From the local government planning system prospective KM is the process to transform knowledge into a valuable organisational asset, experience and expertise that must be formalized, distributed, shared and applied (Hislop, 2013).

From the literature review it is interesting to note that some planning staff believed that the cultural issue is one of the most important aspects of KM. Li (2009), for example argue that the greater hurdles to successful KM are not the technical or process issue, but the cultural issues. Information plays a vital role in the management information system and overall management processes of planning system with the use of technologies. To manage knowledge as the intellectual asset, the planning system is required to better manage and apply information. Knowledge management in the planning system includes the infrastructure, coordination strategy, cultural facets of knowledge, work design of incentive scheme, measurement and evaluation mechanism in place. The knowledge management system (KMS) is the enhanced and modified version of MIS (Inkinen *et al.*, 2015).

The primary goal of KM in a planning system context is to facilitate opportunistic application of fragmented knowledge through integration (Davenport and Prusak, 1998). Knowledge can be compared with human memory and experience, although there is no unique place for creating and conserving knowledge (O'Sullivan, 2008). As a resource, knowledge increases its value with use. Ironically, knowledge will remain dormant and not very useful until it is reflected in action (Rad and Anantatmula, 2005). KM seeks to facilitate knowledge flows and sharing to enhance the productivity of individuals and hence the enterprise (Guns & Valikangas, 1998).

2.4 Effective Coordination Strategy

The local government apparatus has found it difficult to escape from the bureaucratic and technical modes of organisation, which it has inherited. There has been a long history of reform but it is perhaps the latest innovation of the digital technologies, which provide the greatest promise and scope for innovation (Johnson and Wetmore, 2008). The local government has recognised concern for the social, economic and environmental wellbeing of its locality that extends beyond the specific services provided. The information organisation requires far more specialists overall than the command and control companies we are accustomed to; moreover the specialists are found in operations not at corporate headquarters (Drucker, 2008).

An effective coordination strategy is introduced to promote the community involvement in the planning system. There are statutory requirements for making information available about plans and planning applications; allowing people to make representations on plans and planning applications; and governing independent examinations and inquiries (ODPM, 2004). The local authorities recognise the need for coordination in the reform of planning system but at the same time there are some doubts of improvements in online collaboration to eradicate physical touch with some restrictions in the process for transparency and open knowledge sharing (Scarborough and Corbett, 1992). The local authorities are capable with new instruments to make effective coordination a reality with the help of internet based services. The INLOGOV report considers the council wish to remove excessive constraints in existing legislation on the use of innovative communication channels and technologies (Mark et al., 2006).

The coordination has received quite a prominent place in the organisational achievements. Every top executive is interested to find out some productive approach for organisational success through collaboration and coordination. From the 1990s onwards an emphasis on innovation has been seen to enhance effective coordination for quality as the main source of competitive advantage (Bartoli and Hermel, 2004).

The effective coordination strategy in place includes written, oral and visual reports, site visits and tours, personnel rotation, education and training activities and standardization programmes (Garvin, 2012). Chris Argyris (1999) emphasized on organisational learning and communication, he believes if any organization that aspires to succeed in the tougher environment must first resolve a basic dilemma of learning, coordination and reformation.

2.4.1 Online Services ‘Planning Portal’

On 16th February 2004, the Office of Deputy Prime Minister (ODPM) announced that they are planning to initiate the establishment of an integrated planning system to bring together a whole raft of projects and initiatives designed to drive forward the e-planning agenda. An e-Programme Board and a dedicated team have been established as a focus for work in achieving the goal of ensuring every local planning authority is e-enabled by the end of 2005, allowing them to accept and process planning applications electronically (E-planning, 2004).

The planning portal’s director, Chris Kendall (2011) stated in his web portal article *‘communicate electronically to save time and money’*; he said *‘to make savings and work more efficiently, we always encourage LPAs to communicate with all applicants and agents electronically, wherever possible’*. This is supported by the Department for Communities and Local Government (DCLG) and the Development Management Procedure Order (DMPO) that gives guidance on the use of electronic services. The vision of e-government in the UK local government is illustrated below (Figure 2.4).

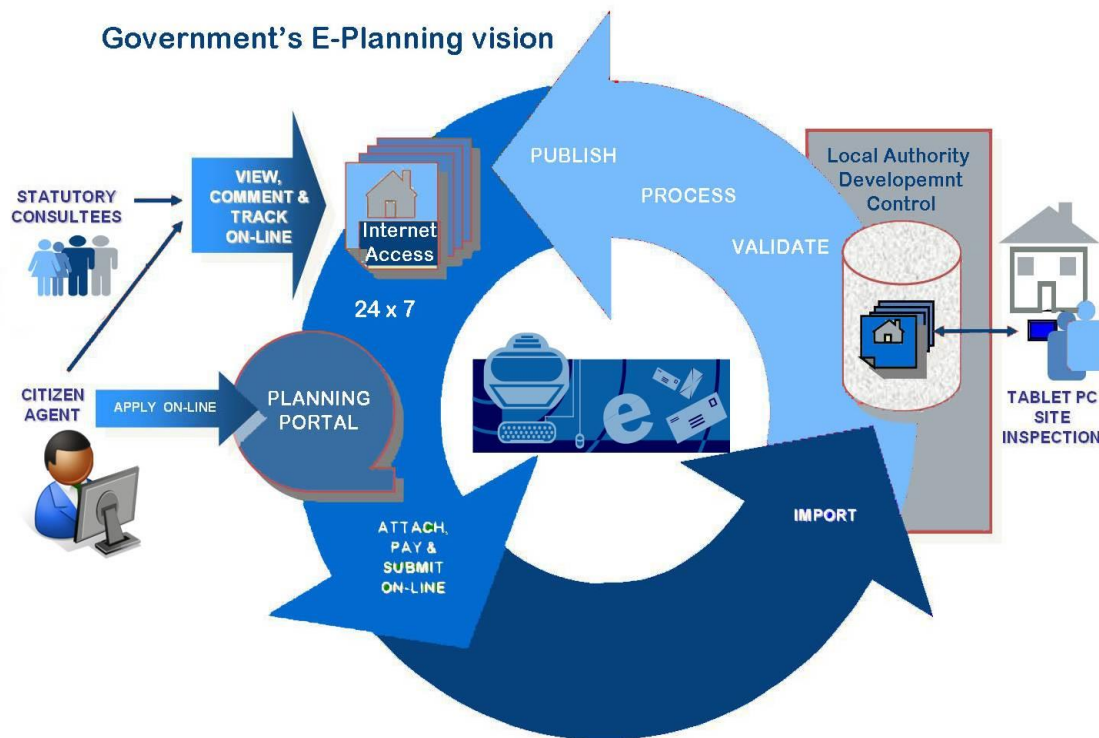


Figure: 2.4 (The UK e-government Vision to Deliver Planning Services Online)

Source: Adopted from Government's E-Planning Vision, 2011

2.4.2 Stakeholders' Participation

Availability of technology and the associated issues of access to information, new ways of communicating and flexible information systems are all providing momentum for planning system changes. Defra 'Department for Environment Food and Rural Affairs' has introduced a requirement for communities and stakeholders to be consulted in the preparation or revision of joint management strategies (Defra, 2013). Stakeholders' participation in planning process generally suggests that planners perceive various challenges to work with local communities (Curry, 2012). The way planning authorities work and the way in which they interact with the relevant stakeholders requires KM policies in place to promote open knowledge culture.

The fieldwork undertaken in the South East Midlands' participating local councils during this study has resulted in a rich depiction of stakeholders' participation. The researcher believes that an integrated technological approach is the appropriate solution to address the identified challenges. It means an appropriate ICT strategy can enhance the public participation in planning process while addressing the three fundamental elements of this research study: *i) Coordination, ii) Motivation and iii) Training*. This way technology can improve the performance efficiency and stakeholders' active participation to enhance the planning process effectiveness.

2.4.3 An Integrated Information System

The use of emerging technologies in local community participation is considered for the future local planning system improvement. The plan modelling, data capturing, 3D-GIS, immersive and non-immersive presentations, interactive displays, mobile technology, cloud computing, physical networks and distributed virtual realities demands are continuously growing. It is examined that special attention is required to address three key points in order to reform the planning system for efficiency and effectiveness as described in the following table (Table 2.1).

- | |
|---|
| 1. Establishing common standards so that technologies and applications can work in an integrated form. |
| 2. Developing appropriate interfaces to allow intuitive use of the technologies in delivering quality services with great efficiency. |
| 3. Understanding how different stakeholders interact to share knowledge and how they use technologies and their applications. |

Table: 2.1 (Integrated Planning System: 3-Points Reform)

Source: Nasrullah Khilji, 2011

2.5 ICTs and Strategic Organisation

From recent research reports the strategic organisation with the appropriate use of ICTs promotes structure departments, units, and divisions in which each layer of management adds value in the goal accomplishment. John Bryson (2004) defines

strategic planning as a discipline effort to produce fundamental decisions and actions that shape and guide what an organisation (or other entity) is, what it does, and why it does it. According to John Bryson (2004), *'the best strategic planning requires broad scale information gathering, an exploration of alternatives, and an emphasis on the future implication of present decisions, it can facilitate communication, accommodate divergent interests and values, and foster orderly decision making and successful implementations'*. ICTs and strategic organisation approach helps in establishing accountable leadership aligned strategically to planning system.

2.5.1 Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the government's key economic, social and environmental objectives and the planning policies to deliver them. These policies will provide local communities with the tools they need to energise their local economies, meet housing needs, plan for a low-carbon future and protect the environmental and cultural landscapes that they value. The government is interested to free communities from unnecessarily prescriptive central government policies, empowering local councils to deliver innovative solutions that work for their local area (Consultation, 2011).

To deliver what are challenging change programmes and maintain its excellent status, it is vital that the local authorities maximise the use of their resources. ICT is integral to most successful organisations today and over recent years this has become increasingly important to the delivery of local council services. In this technology age, citizens, suppliers, partners and internal staff as well as elected members have increasing demands for more responsive, flexible and timely service delivery (SOCITM, 2011). The publication of the ICT Strategic Implementation Plan, which follows the launch of the government ICT strategy in March 2011, has provided a welcome insight into the work to deliver on the ICT strategic actions. ICT strategy is central government focussed, which is critically reviewed as it has little content for local government. With that in mind, there is little expectation that the implementation plan would be any different (Moore, 2011).

Fundamentally, the objective of the local government ICT Strategy is to enable technological tools and the online services, to be at the forefront of service delivery and to allow the council to achieve its business goals. For this reason, the local government ICT strategy is based on the objectives contained in the corporate strategy as described with key objectives in the following table (Table 2.2).

National Planning Policy Framework	
•	Providing a clear community leadership and effective management of resources whilst delivering responsive public services in an open and transparent manner.
•	Improving housing services efficiency to meet the housing need of the district.
•	Increasing participation and attendance in the Council's cultural offering to meet the needs of the whole community.
•	Providing high standards of environmental services across the district delivering a sustainable and quality environment.
•	Creating thriving town centres, keep pleasant villages and make the district an attractive place to live, work and visit.
•	Promoting safe, vibrant and sustainable local communities.
•	Improving the efficiency of service delivery to the Council's customers.

Table: 2.2 (Key National Planning Policy Framework Objectives)

Source: NPPF, 2011

2.5.2 Challenges in ICT Strategy

The speedy change in technology is the major challenge for many councils. One of the key challenges in the ICT strategy is the fusion of technological and human resources. Given the complexity of managing ICT within the context of a specific organisation, the notion of an organisation's 'information ecology' has been gaining visibility (Davenport, 1997). The strategic context constantly changes and because information technology portfolios are assets that requires significant investment and expertise to develop. It is challenging to design a user-centred ICT strategy to properly exploit information services for the maximum benefit of users (Chowdhury and Chowdhury, 2011). The local government takes advantage of new technology in order to plan and procure better, to share future developments and operations, all with the aim of delivering better services to local communities (DBSC, 2013).

The increasingly 'information centric' perception of ICT (as defined from a technology perspective) is already cultivated in the planning system to view data, information and knowledge to hold a more central position in the planning system. It means that many operational and strategic planning managers who had previously seen themselves to be on the side line of the ICT department now realized that they themselves plunged under the umbrella (Aidemark, 2009). This alignment of ICT with strategic organisation is one of the most significant outcomes of planning information system in this study.

A change in any one of the ingredients in planning system usually requires another shift elsewhere. The goal is for information technology investments and the portfolio to be heading in the right direction to maximize the value of those investments to the business (Peter and Broadbent, 1998). Generally, IT management and the strategic management of planning department have differed significantly in recent years. The major challenge in the local government ICT strategy is to provide an integrated knowledge based process management (Galliers and Leidner, 1999). To improve performance by increasing operational productivity and reducing financial costs is based on suitable integration of human and technological resources. This can add value to achieve competitive advantage as shown below (Figure 2.5).

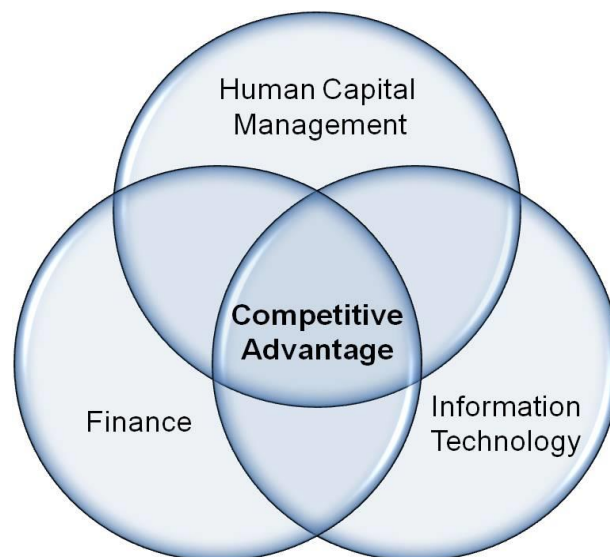


Figure: 2.5 (Competitive Advantage to Strategic Organisation Culture)

Source: HR Logistics, 2010

2.6 Socio-Technical System (STS)

The socio-technical system in the local government context is the cross road intersection between people and technology. Socio-technical system basically refers to the interaction between local government ICT infrastructure and human activities in the planning system. This is to focus on a regime that recognises organisations and technologies are embedded within wider social and economic systems (Herrmann et al., 2007 and Smith et al, 2005). Planning teams might be more effective in their responsibilities when they enjoy innovative communication with knowledge sharing strategy. The researcher preferred to use the term socio-technical system to recognise the interaction between people and technology in the local government workplaces (Anderson and Felici, 2012).

From research field study, it is identified that socio-technical system plays a vital role in the effective planning processes at local government while integrating the social and technological aspects of communities together. A socio-technical system is actually a system composed of technical and social subsystems. An example for this is a factory or also a hospital where people are organized, e.g. in social systems like teams or departments, to do work for which they use technical systems like computers or x-ray machines (Damodaran et al., 2005).

In a socio-technical system (2010), the technical system includes machinery, processes, procedures and physical arrangements while the social system includes people and their habitual attitudes, values, behavioural styles and relationships (2010). In recent years, the analytical lens in innovation and environment studies has tended to pull back from firm level processes of cleaner technology innovation. The Berkhout's studies have focused on wider and linked processes that green the systems of social and technological practices; he stated, *'we satisfy our needs for housing, mobility, food, communications, leisure and so forth. These 'socio-technical regimes' have become the focal unit of analysis but the policy challenge is to transform them into more sustainable configurations'* (Berkout, 2002). The recent theoretical and practical interest in the knowledge management system has led many business managers to

rethink the role of technologies and people integration in their organisations for innovation and continuous performance improvement (Dalkir and Liebowitz, 2011).

2.6.1 The Concept and History of STS

The Socio-Technical System (STS) in organisational development is a move towards the multifaceted organisational process design that recognizes the interaction between people and technology in workplace. The term socio-technical system was actually coined in the 1960s by Eric Trist, Ken Bamforth and Fred Emery, who were working as consultants at the Tavistock Institute in London (Emery and Trist, 1960).

According to the International Human Dimension Programme (IHDP, 2005) the recognition of the system level of change has led to a rapid diffusion of concepts such as technological transition and industrial or socio-technical transformation. The UK local government has already invested to get benefits from technological tools in order to deliver efficient and effective services. The bureaucratic approach of the local government is still a challenging issue to implement integrated knowledge based planning system. The UK Coalition Government has also put pressure on the local authorities to deliver public services electronically. Socio-technical system is a conscious strategy for moving the right knowledge to the right people at the right time to assist sharing and enabling the information to be translated into action to improve the organisational performance (Clarke et al., 2002).

The socio-technical system cannot perform by itself, but it is the outcome of the activities of human and technological combination. Human experts are embedded in social groups that share certain characteristics (e.g. certain ideas, roles, responsibilities, values, perceptions). In contemporary planning system many specialised bodies are related to resources, stakeholders and sub functions because of socio-technical system. In order to improve planning system efficiency and effectiveness for sustainable development, the technical change alone is not sufficient. Changes in the social dimension such as user practices, regulation, and industrial networks are also inevitable (Geels, 2002 and Eason, 2007).

2.6.2 The Role of STS in Planning Process

The role of socio-technical system in planning process is indeed the amalgamation of human and technological resources. This refers to any number of elements, interconnections, attributes and stakeholders interacting to satisfy the due requirements for existing and new development and sustainability standards. The UK local authorities response to an increasing technological advancements, strives to become fast, flat, flexible and open. The concept of networked organisation has taken hold to create new business opportunities, improve overall effectiveness to provide process intelligent networking (Turban et al., 2009).

This means the dominant capacity of documents management, data analysis and GIS applications in the planning system provides planning teams with ICT tools (Fischer, 2006). The integrated planning system offers best solutions especially with support of the interactive and user friendly interface designed to ease the use of sophisticated planning system (Pasher and Ronen, 2011). In addition, web-based technologies are developed to offer useful stakeholders' participation in planning system along with important features of information integration and knowledge sharing through data dissemination techniques and process efficiency. Automation of key planning procedures helps to reduce cost expenditure and to improve time consumption and to minimize the bureaucracy throughout the planning system (McNabb, 2006).

2.6.3 Human and Technological Resources

To develop and implement the knowledge based planning system, it is important that people welcome emerging technologies as a helping tool to enhance their capabilities rather a threat to substitute their competences. During the research fieldwork, it is examined that the life cycle of knowledge management within an organisation depends on knowledge generation, propagation, and retirement; in order to remain competitive (Siemieniuch and Sinclair, 1999).

The socio-technical system is the right term to promote vigorous human and technology integration. Voss et al., (2007), *'we make our own history but we do not choose it; an indication of this statement is the fact that policy and public debate are primarily concerned with problems that arise from past economic, political, scientific and technological activities'*. The local government is generally assumed to provide public services including physical infrastructure for the well-organized operation of local areas, community services, which develop human resources to improve productivity and to enhance the standard of living for general public (Helling, 2005). The socio-technical system integrating the key planning system issues (Social, Environmental, Technical, and Political) for better performance as encircled in the following graphical illustration (Figure 2.6).

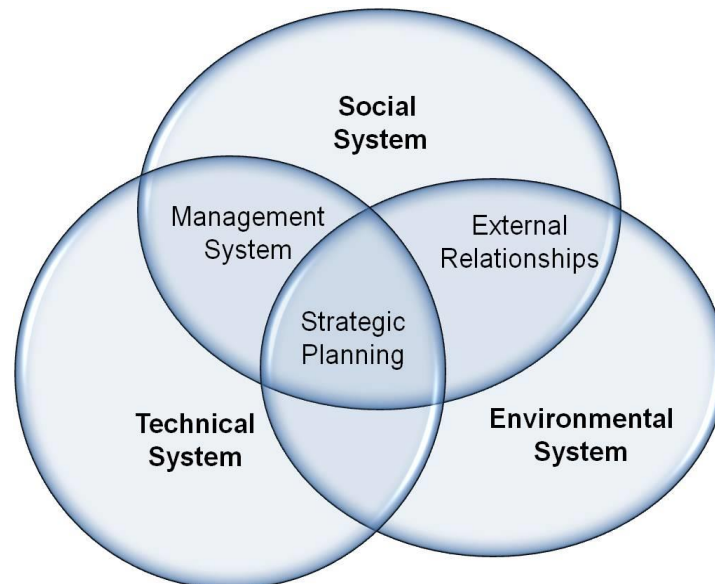


Figure: 2.6 (Research Socio-technical Model for Strategic Planning)

Source: Geels, 2005

Taking into consideration the vibrant nature of planning at local level, it is not surprising that the local government became one of the major users of socio-technical system in UK. The socio-technical system can play a vital role during planning permission process for innovative communication channels, strong coordination strategy and knowledge management. The socio-technical system requires to be designed in human centred ways that needs to design and develop technologies according to human work pattern (Ribes & Finholt, 2007; Weiss, 2013).

2.6.4 Relationship between Man and Machine

This relationship between Machine and Man is referred to socio-technical system, which is indeed a compilation of people, technology and processes that engage in an exchange relationship with one another. To deal with a dynamic environment, learning new sets of capabilities becomes essential for planning system. This important relationship addresses how long term and large scale shifts from one socio-technical system to another come about, using insights from evolutionary economics, sociological and innovation studies (Geels, 2005).

An integrated knowledge based planning system is practically feasible in local government for both sustainability development and economic viability. The socio-technical system in simplest form is how planning authorities plan, communicate and work with each other within the legislations of government policies. It can also help the stakeholders to know how they contribute and the important role they can play for sustainability development. The localism act aims to shift power from central government back to individuals, communities and councils (Localism Act, 2012).

2.7 Collaboration and Team Efforts

In UK the Infrastructure Planning Commission (IPC) is set up under the Government's 2008 Planning Act, alongside other reforms to make the planning application process for nationally significant infrastructure projects faster, fairer and easier for all stakeholders to get involved. The IPC is the independent body that decides applications for nationally significant infrastructure projects. These are the large projects that support the economy and vital public services, including railways, large wind farms, power stations, reservoirs, harbours, airports and sewage treatment works. IPC Commissioners make key decisions within the framework of National Policy Statements, weighing the national benefit of proposals against the local impact (IPC, 2012).

The UK local government is experiencing a new phase of development and change in its infrastructure demand that requires collaboration and team efforts for improved planning system. This provides assurance to planners, developers and investors to

support the continual drive for sustainable development. This also ensures that development brings quality of improvements for all stakeholders without breaching environmental limits. Hansen and Huang (1997) in their funded research stated: *'few planning programmes have as great an impact upon growth patterns as those involving transportation systems'*. The global change has direct impact on the planning infrastructure (NIP, 2012).

The UK state government ICT strategy highlights that the UK public services have moved to become more digital since 1994, when the Cabinet Office announced that all central government and agency websites would be routed through www.open.gov.uk. Since then, the use of technology to deliver improved public services has adapted and developed in a way that could never have been foreseen till the end of previous century. Today, 100% of citizen based services in the UK are fully or partially online, compared with the EU average of just 71% (Cabinet Office, 2010).

2.7.1 Technical and Intellectual Infrastructure

Technical and intellectual Infrastructure is an imperative aspect of the local government planning system to shape and steer the development of a region. However, infrastructure development involves lofty budgets, long term strategy and life time objectives. Infrastructure planning is actually all about substructure that needs to be completed for sustainable development because a single mistake in planning system can result in additional costs in years to come (Dutta and Bilbao-Osorio, 2012). The introduction of the proposed National Policy Statements for technical and intellectual infrastructure is based on government policy clarification. The national policy statement provided a richer integrated strategic model for sustainable development, sophisticated spatial objectives and to remove a source of delay in planning system (ICE, 2013).

The SOCITM President Joe Creese (2010), described exclusively for e-government monitor and argued a spending cut available to the CIOs with a unique opportunity to transform their organisation and deliver more holistic and successful public sector intellectual infrastructure. He stated that IT departments would need to change

dramatically in order to become much less to do with making things and much more about facilitating change and driving efficiency. In the best performing organisations of tomorrow, ICT will be a power house of innovation and modernisation, not simply a support service. According to the DCLG (2009) article, *'Improving the technical and intellectual infrastructure is critical to maintaining and improving quality of life and safeguarding the environment in an increasingly competitive global economy'*.

2.7.2 Planning Infrastructure for Growth

In the UK Planning Act, established the framework at local government for the new development approval regulations but the detailed procedures and rules for how development permission should be acquired are being set out in secondary legislation and guidance (Killian and Pretty, 2008). The statutory instruments and guidance offer detailed technical policies about how the planning infrastructure principles are established and what are the standards mentioned in the Planning Act. The Planning Act also allows the Secretary of State to issue guidance for the benefit of participants in the infrastructure planning commission process, explaining how an application can meet the standards. The Act presumes from participants and ways in which they can make their opinions. The secretary of state can also issue written guidance to the Infrastructure Planning Commission in order to guide its decision (Planning Act, 2008).

Planning infrastructure for growth is demonstrated by an example from Milton Keynes Council strategic growth plan. The Strategy for Growth of Milton Keynes is completed in June 2006; as a long-term vision for Milton Keynes, which is developed through the MK 2031 project. The planning infrastructure for growth provides a platform for major economic and cultural development and also takes into account the qualitative and quantitative changes required in education, health and social care alongside major infrastructure. The growth of Milton Keynes would make a significant contribution to the sustainable development of the South East Region of England (Future Plans, 2010). The local government planning departments basically establish the vision, set planning principles, contextualize the need for change, and make decisions for the planning infrastructure (Roberts, 2004).

2.7.3 Local Infrastructure Development

The local authorities want to share planning infrastructures for a number of benefits while developing a common understanding of what and where the most significant local infrastructure issues are. Some local authorities in major developments plans adopt a joint infrastructure planning such as four local areas (South Bedfordshire and Luton, Surrey, Swindon and Tower Hamlets in London), are coordinating to work together. The South Bedfordshire and the Central Bedfordshire, Luton and South Bedfordshire Joint Committee commissioned is another example for a social infrastructure study as a result of a clear message from consultation about the need to deliver this alongside future housing growth (CBC, 2010).

Decisions over land use are fundamental to the implementation of the transport policies of any local council. However, it is estimated that decisions over land use only affect 2% of the built environment per year, over a period of time; this can cumulatively amount to a significant proportion. It is essential that decisions regarding land use take into account the principles of sustainability (BLTP, 2006). For these reasons, the South East Midlands partnership brings together businesses, universities and colleges, community groups, social enterprises and local government in Northamptonshire, Bedfordshire, Luton, Milton Keynes, Cherwell and Aylesbury Vale. Together these partners are working closely to support inward investment, economic growth, new enterprise and job creation (SEMLEPa, 2012).

2.8 A willingness to Achieve Smartness

Geographic Information System (GIS) is specialized computer programmes designed to operate, store, process, retrieve and analyse geospatial data. GIS has particular value when it is needed to answer questions about location, pattern, trends and conditions (Heywood et al., 2011). GIS integrates hardware, software, and data for capturing, managing, analysing, and displaying all forms of geographically referenced information. A willingness to achieve smartness, the local councils' planning system is required to focus on justifying business concerns, growing existing businesses, providing job opportunities and increasing local revenue (Kissinger et al., 2011).

GIS consistently delivers a return on investment including cost avoidance; time savings; increased accuracy, productivity, revenue and better decision making (ESRI, 2010). GIS allows users to view, understand, question, interpret, and visualize data in many ways to achieve smartness that reveal relationships, patterns, and trends in the form of maps, globes, reports, and charts (GIS.Com, 2011).

2.8.1 Functionalities of GIS in the Planning System

Geographic Information System traces its roots back to Ian McHarg's classic, *Design with Nature* (McHarg, 1992). Even earlier, in 1912, city plans for both Dusseldorf in Germany, and Billerica in Massachusetts, extracted data from one map and added it to another (Al-Kodmany, 2014). Today, planners of all types and in all functional areas (e.g., city planning, transportation, social services, etc.) around the world use GIS in their daily work (Tomlinson, 2013). The Web is a strong platform for GIS, distributing geographic knowledge everywhere and leveraging this content to serve the needs of multiple users. The planning professionals require technical expertise, political knowledge and financial understanding to translate a vision of tomorrow into a strategic action plan (Post, 2014).

The planning officials in South East Midlands (Central Bedfordshire, Luton, Northampton, Bedford and Milton Keynes) have already embraced GIS tools as a means of achieving integrated knowledge based planning system. The use of GIS improves the performance of planners and provides satisfactory input to users as they develop a vision for enhanced quality (ESRI, 2009). The prospective of GIS is to provide information in an accessible format as a useful tool in evidence based sustainable development policy making. Joint working, data exchange and wide access to data are all key features of the successful use of GIS in local planning system for sustainable development (ESRI, 2013).

2.8.2 GIS and Planning Information System

The embedded GIS with planning system is one of the key developments in the implementation of an integrate knowledge based system in the local government. It is assumed to provide a complete spatial database along with the planning attribute

data, which also record the development planning order approval, building plan approval and building occupation order (ESRI, 2013). An integrated knowledge based planning information system DBMS with embedded GIS and planning portal is explained in the graphical sketch below (Figure 2.7).

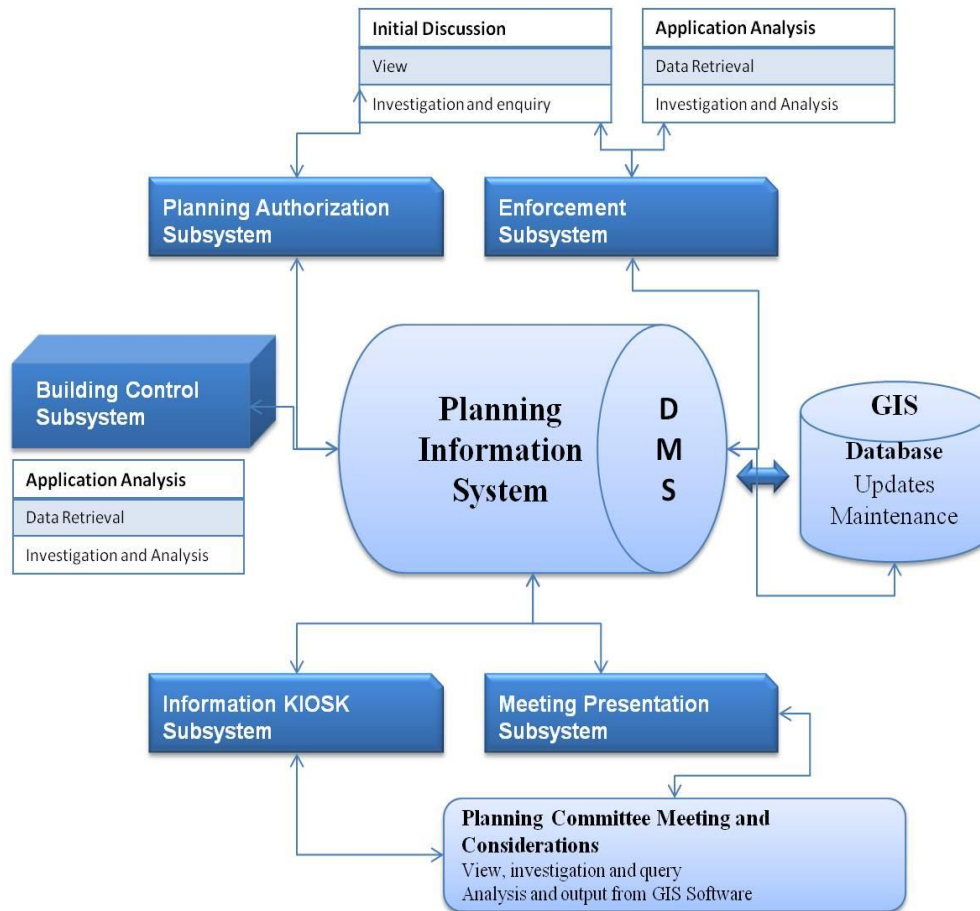


Figure: 2.7 (Planning Information System and GIS Database)

Source: Adopted from ESRI, 2006

The planning and control sub-systems enable the planning teams to make decision properly, systematically and rationally. One of the key advantages of the subsystems is that stakeholders can choose the type of information they want to retrieve and to share between them as and when they need them. The planning information sub-system serves as the GIS interface within planning document management system (DMS) that provides direct access to the GIS database (ESRI, 2006). GIS in planning information system enables changes to improve efficiency and effectiveness within the local government planning system (Albert, 2012).

2.8.3 Chain of GIS in Planning Process

Longley et al., (2010) in their book on GIS emphasised on the nature of data requirements in Geographic Information System. On the basis of the tasks performed, two types of information system can be identified: transaction processing systems and decision support systems. In transaction processing systems, emphasis is placed on recording and manipulating the occurrence of operations; banking and airline reservation systems are well known examples. Transaction processing systems whether they operate in online or batch mode, can be updated or retrieval oriented and are based on clearly defined procedures. GIS cannot be bought off the shelf; the system has to be built up within an organisation whenever local councils require using GIS as per their need.

From the field study, it is observed that the Milton Keynes Borough Council has a plan to give access to interactive website integrated with GIS. The new mapping service will allow Milton Keynes Council to show people geographic information about their area embedded with GIS. The web portal will contain a growing list of information which will allow users to view, enquire and interact with the council as the mapping system develops (MKC, 2010). A willingness to achieve smartness within the council, it requires to transform the way planners work with farmers, landowners and local businesses to make sure that public ways, footpaths, byways, clear and properly maintained, so that everyone can enjoy them (BBC, 2010).

2.9 Innovation for Sustainable Development

Sustainable development in context of local government planning system is described as '*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*' (WLGA, 2015). The sustainable development is about achieving improved council public support services and better decisions. It enhances well-being and a better quality of life, good planning intelligence, quality environment and economic affluence for existing and future generations. Innovation in sustainable development can protect and enhance the natural and built environment by learning to live within environmental limits for generations (Lafferty, 2006).

In UK, the Sustainable Development Commission (SDC) has engaged at central, regional, and local levels to enable and support the delivery of local sustainable development (SDC, 2011). There were many excellent examples of regional and local activity driving forward sustainable development. However, the SDC understands the importance of further research to deliver smart, more long-term and sustainable solutions to local issues. This research study is focused to identify key knowledge factors to achieve a knowledge based planning system for sustainable development. The fieldwork in this study requires to examine the local leadership, public engagement, crossing boundaries, in how public services work together with participating councils and commitment and unwavering support from central government. According to the Welsh Local Government Association online statement, *'under the Local Government Act 2000, Councils have been charged with promoting the social, economic and environmental well-being of their area and producing community strategies which contribute to the achievement of sustainable development in the UK'* (WLGA, 2015).

The social, economic and environmental well-being is directly related to sustainable development. In essence, everything a local government does should assist in the continuing sustainability of the local area and the delivery of a more smart and sustainable projects (Sachs, 2015). Innovation for sustainable development is required to promote an efficient use of urban space, waste management, reducing consumption of material and energy resources, improving community liveability, and organizing administrative and planning processes that can deal effectively with the attendant socio-economic and ecological complexities (Rees and Roseland, 1998). In the UK local government, it is now essential to attain the global sustainable development goals by managing resources efficiently and effectively (Ghai and Vivian, 1995).

2.9.1 Multi-Level Learning Strategy

Multi-level learning approaches suggest that individuals, groups and organisations act both independently and interact dynamically to contribute in innovation for improved organisational performance (Milia and Birdi, 2009). Several training theorists, personality theorists, counseling psychologists and most important, industrial and organisational psychologists have contributed to add to the knowledge

of Organisational Behaviour. Innovation for sustainable development contribute for better learning, personality development, training, leadership, motivation, performance appraisals, vision, strategy, attitude and coordinated efforts (Robbins, 2014).

Multi-level learning strategy provides an integrated analysis of management, organisations and people and develops the conceptual, strategic and practical skills necessary for managers (Brooks, 2009). Recent and relevant research studies as well as some related government policies and their initiatives have been critically analysed in order to identify key factors that are supposed to contribute to the economic, social and environmental sustainability of information services (Chowdhury, 2013). Organisational Behaviour in the planning system requires cultural changes embedded with technological advancements. This change emphasises on staff and stakeholders interaction in planning system for sustainable development. Staff always handle various assignments with a different approaches and styles (Mullins, 2010).

The concept of organisational behaviour is well summarized by Allen and Henn (2007), in the analysis of research, *'the different cultures of the organisations interpret or structure the problems in different ways; they weight the solution criteria differently and thus almost guarantee the development of different solutions'*. Stephen Robbins (2014) mentioned quite well that managers are called coaches, advisors, sponsors or facilitators; in many organisation employees are now called associates and there is a blurring between the roles of managers and workers. Decision making is being pushed down to the operating level, where workers are being given the freedom to make choices for schedules and to solve work related problems (Robbins, 2014).

2.9.2 Internal and External Forces

The current credit crunch, difficult economic environment and in the face of fierce world competition, every organisation is concerned with being efficient and creative. Effectiveness is the key concern to achieve organisational goals these days. Mullins

(2002) in his book on Management and Organisational Behaviour stated, *'upon the attainment of goals and objectives, the success and ultimate survival of the future organisation will rest'*. The Milton Keynes Council introduced a new management style by making a partnership with private company for various ICT internal and external tasks. This partnership included extensive investment in IT, accommodation, administrative support and public access strategy (MKC, 2011).

Internal and external forces influence the way planning services are delivered across the local government due to economic conditions and social challenges. The planning system is continuously transforming, evolving and restructuring to deliver better services. Today, planning system is reforming itself but it requires to be equipped with an integrated knowledge management as well (LGR, 2013). According to Pasher and Ronen (2011), *'an intellectual journey into KM is beginning with an understanding of the concept of intellectual capital and how to establish an appropriate culture'*. The objectives of an organisation are related to the input conversion and output cycle. In order to achieve its objectives and satisfy its goals the organisation takes inputs from the environment, through a series of activities transforms or converts inputs into outputs and returns them to the environment as input to other systems (Mullins, 2010).

2.9.3 The Impact of Organisational Behaviour

The impact of organisational behaviour on planning service delivery and the expression of knowledge sharing in an organisation's culture is the key characteristic to improve performance. It allows everyone in planning team to understand the impact and relationship that exists amongst people inside and outside the planning support services for sustainable development (Kind and Lawley, 2013; and Wilson, 2010).

A variety of factors influence organizational behaviour, including the organisation's structure, policies and procedures, management effectiveness and interactions between colleagues. Innovation for sustainable development inspires employees to work harder (Wheelen et al., 2014). In theory, the separation of political goal setting

from managerial execution should provide for an enhanced capacity to translate intent into outcomes. The key mechanism is the enhanced ability of managers to determine the best means to deliver public policy, without being subject to daily involvement of elected politicians (Pollitt and Bouckaert, 2000), and the greater scope for direct citizen involvement (Newman, 2001).

2.10 Politics and Administration (Local Authority Governance)

The administrative structure of the UK local government is continuously changing and everybody desires to keep the administrative powers away from political lobbies. It is observed that the trend towards privatizing public services is expected to continue that will advance political and administrative structures in local government between the public, private, and not for profit sectors in public policy implementation. The use of terms like cooperation, collaboration, strategic alliances, joint ventures and partnerships across councils became common for political and administrative control (Williams, 2004).

Governance arrangements in the public services are closely scrutinised and sometimes criticised. Significant governance failings attract immense attention and one significant failing can taint a whole sector. The local authorities are big business employing nearly two million people and accounting for 25% of public spending. They are vitally important to all tax payers and citizens. The local authorities have a key role in leading their local communities and ensuring the delivery of quality services. Good governance structures enable local authority to pursue its vision effectively and supporting the vision with mechanisms for risk management (CIPFA, 2010).

2.10.1 Local Government Bureaucracy

The local government is often characterised as bureaucratic and inefficient in delivering essential services. Major interest in local government activities centres on services not being delivered efficiently and any headlines this may attract (Lapsley et al., 2010). The local government bureaucracy was estimated costing £16m a year as part of the Coalition Government's review of spending as promises made in 2010' (HoC, 2013).

Eric Pickles (2010) has put plans in motion to move swiftly to dismantle the funding and powers of regional local authority leaders' boards. This took over most of the functions and staff of the old regional assemblies as part of the bureaucratic regional structures. It is worth mentioning that planning system is a complex set of activities and can be hard, possibly one of the most difficult policy areas of bureaucracy.

2.10.2 Local Government Association (LGA)

The comprehensive reviews of administrative structure and practices have been undertaken by governments of all political persuasions and under a wide variety of political circumstances. They have often involved considerable investment of money, time and political discussion, which are characteristic features of 20th century bureaucratic and political life (March and Olsen, 2010). To implement public policy, there must be something prior to the implementation; otherwise there would be nothing significant toward the process of transformation. The LGA worked alongside partners to promote local governance is exposed in the table below (Table 2.3).

LGA with Five Partner Organisations

1. Improvement and Development Agency for Local Government (IDeA)

2. Local Government Employers (LGE)

3. Local Authorities Coordinators of Regulatory Services (LACORS)

4. Local Partnerships

5. Leadership Centre for Local Government

Table: 2.3 (Local Government Association Partner Bodies)
Source: LGA, 2010

The process of public policymaking is normally very complex, involving hundreds of actors from interest groups, governmental institutions, journalists, and the research community who have different goals, perceptions of the situation, and policy preferences. In any given policy domain, such as health care or air pollution control, there are normally dozens of programmes involving multiple levels of government

bodies (Sabatier, 2006). The Chairperson of Local Government Association, Councillor Dame Margaret Eaton in the LGA Business Plan Report, mentioned that the local councils are working in the most challenging economic climate of a generation. The local government association positions the local plans in the best way to help councils meet key challenges (LGA, 2010).

The local public services need to be liberated from unnecessary central controls so they can develop tailored responses to the challenges of local communities in a co-ordinated and efficient way. The planning system is requiring a new framework of accountability to liberate public sector partners to work together more effectively and ensure they are driven by and responsive to the needs of their local communities (LGA, 2010). A new organisation by the name of SEMLEP was established in South East Midlands in 2010 for economic reforms that is selected by the researcher for fieldwork and investigation in this study.

2.10.3 SEMLEP

The key partners in the South East Midlands Local Enterprise Partnership (SEMPLEP) are the unitary authorities of Bedford, Central Bedfordshire, Luton, Milton Keynes, Aylesbury Vale in Buckinghamshire and the Boroughs of Northampton, Kettering and Corby and the districts of South Northamptonshire, Daventry, Cherwell in Oxfordshire and The Borough of Dacorum in Hertfordshire. LEP in the South East Midlands is working closely with the Chambers of Commerce in Bedfordshire and Luton, North Bucks and Milton Keynes. It also collaborates with the Federation of Small Businesses and the Institute of Directors with strong backing from other businesses. SEMLEP aspires to be one of the most innovative, successful and high performing local enterprise partnerships (SEMLEP, 2012a).

The South East Midlands Local Enterprise Partnership aspires to be one of the most innovative, successful and high performing local enterprise partnerships in England. This is measured in overall terms, by growth in Gross Value Added per head relative to other LEPs and as demonstrated by the effective collective leadership. The leadership vision is provided by local authority and private sector partners for social interaction and sustainable development in the South East (SEMLEP, 2012b).

2.11 Sociological Context (Social Interaction)

There are various theories in the literature of social sciences about sociology but Haralambos and Holborn (2008) describe the sociological theory as a set of ideas, which provides an explanation for human society. Social interactions are the acts, actions or practices of two or more people mutually oriented towards each other, that is, any behaviour that tries to affect or take account of each other subjective experiences or intentions. Friends writing letters are socially interacting, as are enemy generals preparing opposing war plans. Social interaction is not defined by type of physical relation or behaviour, or by physical distance. It is a matter of a mutual subjective orientation towards each other. Thus even when no physical behaviour is involved, as with two rivals deliberately ignoring each other's' work (Rummel, 2003).

2.11.1 Theory and Practice

Sociology deals with global issues like the environment, migration and globalization itself (BSA, 2010). The planners are expected in the local government administrative governance to have knowledge and understanding of society and the ability to analyse key social science concepts by means of both theories and evidence. According to Kenneth Allan, '*sociological theory consists of abstract and testable propositions about society*' (Allan, 2013). It is also expected for effective planning system that staff of planning department demonstrate various sociological areas as specialists of economics, environment, geography, social media, politics, psychology, social policy and sociology (Marsh, 2012).

The social work process examines the knowledge, skills and values that underpin and share social work practice and processes with a clear focus on skills, social workouts and the suitability of different methods (Becker et al., 2012). Evolutionary psychology stresses that the human brain is shaped by natural selection during human evolutionary history (Glassman, 2008). Trust and trustworthiness have been identified as important factors in human behaviour and economic performance. The constructs have been studied in multiple disciplines including economics, political science, psychology, sociology and anthropology, among others, using many different methods, including laboratory experiments, surveys, interviews and analysis of data (Bohnet and Croson, 2004).

2.11.2 Sociology and Social Borders

Several research studies have shown that liking and influencing are linked; in fact, one study showed that the influence of someone who was liked and admired is greater than the influence of somebody who had the power to reward and punish (Guirdham, 1995). In psychology it is possible to measure, explain and even change the behaviour of humans but sociology focuses group of people rather than individual. Stephen Robbins (2014) has discussed the role of sociology and psychology in the organisational behaviour to receive the valuable input from society such as group dynamic, technology, bureaucracy, conflict and attitudes for useful output to social life (Robbins, 2014).

2.11.3 Sociological Behaviour

To bring innovation in planning system with the use of ICTs, the UK local government is focusing on better societies and social life. It is noticed that societies and social behaviour in term of multiculturalism, individualism, family dynamic, ethical values, transient employments and social mobility need thoroughly study. The rapid change in technologies has direct impact on sociological behaviour that has narrowed the divide between generations but the gap between the rich and the poor is widened (Lesko and Talburt, 2012).

2.12 Research Gap Analysis

From literature review and fieldwork, the researcher recognized that there was a need for an integrated knowledge based planning system. There was an absence of practical knowledge based planning system structure to provide a uniform outline with various *supportive* and *preventive* knowledge factors. This has motivated the researcher to conduct preliminary study / studies to identify key supportive and preventive knowledge factors (see chapter five (Ch-5)) within planning system to develop and propose an integrated knowledge based planning model. The researcher observed that there was less justification of why various councils apply planning system in different ways including their ICT strategy (see for detail chapter six (Ch-6)).

There were lack of mixed method studies to report the key knowledge factors influencing the efficiency and effectiveness of planning system. The researcher felt a need for this research study to investigate how the UK local authorities implement and deliver successful planning system in particular while designing and applying their ICT strategies. This study was carried out to bridge the identified gap by investigating the local government for an integrated knowledge based planning system. The research pragmatic framework were developed to justify the transformation of planning system from its current 'As-Is' state towards the future 'To-Be' state. This literature review chapter revealed the research gaps that were required to be addressed in the research fieldwork.

The gap between theory and practice was the focus ground to be examined during this study by applying theoretical, empirical, contextual and substantive methods (Swanson *et al.*, 2005). Theoretical gaps refer to insufficient explanation or prediction of some phenomena 'why'. Empirical gaps refer to the lack of empirical studies or inconsistent findings on some phenomena 'how'. Contextual gaps referred to the generalisability of the findings of existing state of planning system. Substantive gaps referred to the lack of managerial understanding. The gap analysis was a technique for determining the steps to be taken in moving from a current state to a desired future state during this study (Alvesson and Sandberg, 2013). The key known gap classifications are shown below in the template diagram for the research gap analysis rationalisation (Figure 2.8).

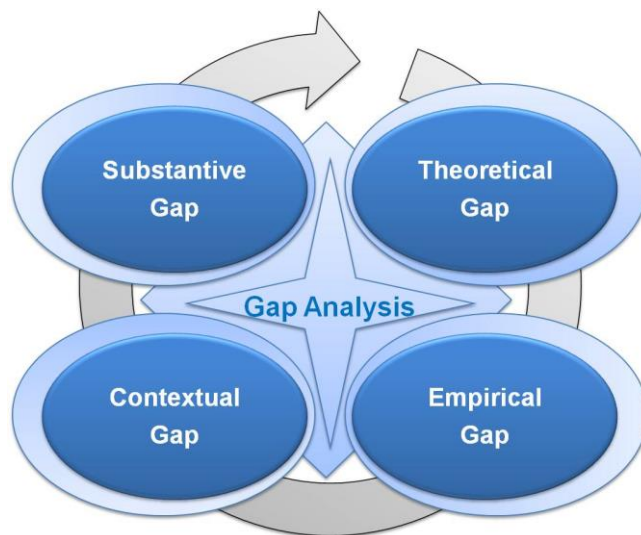


Figure: 2.8 (Research Gap Analysis)

Source: Creswell and Clark, 2011

The researcher also realised that there was shortage of mixed methodological approach to investigate an integrated knowledge based planning system in the local government. There were few studies that have been conducted using in depth case studies to examine planning system transformation towards sustainable development. It was intended to examine the socio-technical system by combining technological and human resources. A need for an empirical research study was apprehended by using mixed methods including interviews sessions with senior planning officers.

Fieldwork was conducted to collect conceptual and empirical data from participating local authorities' staff, who were involved in sharing and managing knowledge for improved planning support services. The fieldwork during this research phase contributed to examine planning process in five local authorities in the South East Midlands to identify key knowledge tacit and implicit elements. This research study attempted to make a valuable contribution towards sustainable development by focusing the identified key supportive and preventive knowledge factors. The development and recommendation of an integrated knowledge based planning system in the local government was the key contribution of this study

2.13 Chapter Summary

This chapter (Ch-2) has provided literature review to scrutinise the role of innovative communication, effective coordination and integrated knowledge management in reforming the planning system. In this chapter the major concepts and key characteristics are discussed with various emerging technological and capable human dimensions in reference to local authorities' planning and development strategies. The researcher in this chapter has examined the current literature on the area of KM and ICT in context of planning system transformation towards smart and sustainable development. A brief analysis of the different representations dealing with the transformation of planning system is deliberated. This chapter revealed a number of research gaps classified into theoretical, empirical, contextual and substantive groups to establish a ground to design research methodological approach in next chapter (Ch-3) and to conduct fieldwork for data collection and analysis in 3rd part of thesis.

PART – II

METHOD

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CHAPTER 3**METHODOLOGICAL
CONSIDERATIONS**

This chapter (Ch-3), describes the methodological approach adopted for the field study to understand and analyse the influences of key research propositions. The research methodology was applied to examine the role of innovative communication channels, effective coordination strategy and integrated knowledge management in the UK local government planning system. A mixed methodology was selected to collect both qualitative and quantitative data to assess the knowledge management practices. The main reason behind adopting a mixed methodological approach is justified in this chapter to improve the probability for greater data reliability.

3.1 Shaping Research Methodology

This chapter presents the research methodology along with research philosophy, paradigm, design and procedures to address the investigative questions. This research methodology is focused to investigate the impact of knowledge management in the planning system. This study is looking particularly into knowledge integration and how the planners and local communities can benefit from knowledge management in general. A strategy in research methodology refers to a discussion of how research is done, or should be done and to the critical analysis of methods of research that must include a critical evaluation of alternative research methods (Blaikie, 2000).

Taylor and Bogdan (1998) defined research methodology as 'the way in which we approach problems and seek answers is called methodology'. Strauss and Corbin (1998) defined methodology as a way of thinking about and studying social reality while a method is a set of procedures and techniques for gathering and analysing research data. The researcher adopted mixed methodology to better understand the relationship between the citizen and the local authorities. The mixed methodology is adopted in this study to better examine the council planning services around citizen needs and their approaches to information management systems.

The mixed methodology collects both qualitative and quantitative data to assess the knowledge management practices in context of the planning system reform. This research is primarily based on qualitative data. However, in some cases descriptive statistics have been used to show some comparison and trends. The main reason behind applying mixed methodological approach was to achieve greater probability of consistency and reliability for data analysis. KM itself is a social protocol and there is no general metric to measure its efficiency and effectiveness in reference to reformation in the planning system. The research methodology with exploratory fieldwork and mixed methods provide strengths that offset the weaknesses of both quantitative and qualitative research. Consequently, an important part of the research fieldwork can be supported from field data collection to extract key information from study participants.

3.2 Framework Design Issues

A mixed methodology was applied to examine the technological application, social inclusion and communities' participation within the planning system. The investigation was carried out to assess the local government aspirations to set out their e-government and ICT strategy. The key research objectives and questions were framed to identify fundamental supportive and preventive knowledge elements. The research framework was designed to narrow down the research issues by examining the impact of knowledge management on human and technological resources in the local government.

The UK local government ICT strategy is based on best practices, policies and services of e-Government (Trajkovik, 2011). Cullingworth et al., (2014) delivered a structure guide to the British planning system, its history, its institutions and organisations, their functions and procedures, planning policy and planning law. They provided this in response to the changing needs of planners, changing planning framework and continuous reformation strategies. The local government is keen to boast about the efficiency of their electronic systems. Information and communication technologies (ICTs) specifically permit public service to become cheaper, faster and more democratic (Homburg, 2008).

To form the research framework design, the nature of requisite data was identified as a challenging issue. The researcher considered the mixed methodology to collect data during both preliminary and main fieldwork. The mixed methodology was chosen to address the framework design issue in processing and developing pragmatic models. The mixed methodology was applied to justify an enriched analysis of both qualitative and quantitative methods (Trochim and Donnelly, 2007; Creswell 2013). Lind and Otenyo (2011) suggested that the local government is now expected to make a strong web presence for public policy and administration gain to address issues related to the emerging use of the electronic media. These include the impact of the changing social and economic demands for land use and the dramatic changes in technology driven services (Peled, 2014).

Cullingworth and Caves (2013) provides a comprehensive introduction to the policies, theory and practice of planning system reformation in USA, Canada and UK. They describe the nature of the planning process and the way in which policy issues are identified, defined and approached. The planning system transformation is explained as a continuous process by outlining land use, urban planning and environmental protection policies. Peled (2014) proposes the establishment of a Public Sector Information Exchange (PSIE), through which agencies would trade information. After describing public sector information sharing failures and the advantages of incentivized sharing, Peled examines the USA Open Data programme and the gap between its results. He offers examples of creative public sector information sharing in the United States, Australia, Brazil, the Netherlands, and Iceland.

3.2.1 Access to Planning Authorities

Accessing the local planning authorities was one of the most challenging tasks during this research study. As the researcher initially lacked direct and personal contacts, recruitment had to be done in many ways such as by sending introductory emails, establishing personal contacts with the local councils' staff, making speculative telephone calls, using the senior executives' personal referrals and by going to attend the local development bodies' seminars and conferences such as EEDA, BDA, SEEDA and later SEMLEP (South East Midlands Local Enterprise Partnership) forums to interact with senior and executive planning staff.

Once the list of key contacts was established, the second step was to interview those volunteer participants. The interview sessions were conducted comprised of unstructured format with open questions and structured questionnaires. The interviews and questionnaires were helpful to understand the participants' roles, their views in terms of planning system and their ICT strategy. The participants' points of view about their ICT strategy and knowledge management policies revealed the planning system transformation from previous to present state. To address the key research challenges, the key supportive and preventive knowledge factors were identified during research fieldwork to develop a knowledge based planning model.

3.2.2 Units of Analysis

It was a challenging task for the researcher to determine the units of analysis in this study. Yin (2012) describes a general guide for the definition of unit of analysis, which is related to the way researchers have defined the initial research questions. This research study was an attempt to investigate the efficiency and effectiveness of planning system being applied among participating local authorities and how they would like to transform the delivery of their public services. The unit of analysis in this study included the participating councils and their ICT strategies, knowledge management policies, innovative practices and organisational learning.

The fieldwork was conducted in the South East Midlands and data was collected within five participating local planning authorities. The local councils were using standard ICT tools for planning processes or related strategies to reduce cost and to promote sustainable development. A need was realised for performance measures in order to assess performance of services and to ensure the rhetoric of e-services in local governance paradigms (Asgarkhani, 2005).

3.2.3 Research Instruments

The major instruments applied for collecting evidence in this research study were a face to face semi-structured interviews, online forums and structured questionnaires. The semi-structured interviews with open questions were regarded as one of the most significant instruments to collect empirical data. The strength of an interview is that it focuses directly on the case study topic and provides perceived causal inferences and explanations (Yin, 2009). In this study, the literature review was considered as a tool to build evidence to answer the research question.

In the semi-structured interview sessions, the researcher was in control of the conversation relevant to the primary topic to collect real life information. The research gap was identified from the set aims, objectives and problematics (Ch-1) and critical literature review (Ch-2). The research instrument was shaped from key objectives highlighted and the identified research gap. A constant comparison was opted in developing a grounded theory and building a theoretical type of research (Eisenhardt and Graebner, 2007) as shown in the diagram below (Figure 3.1).

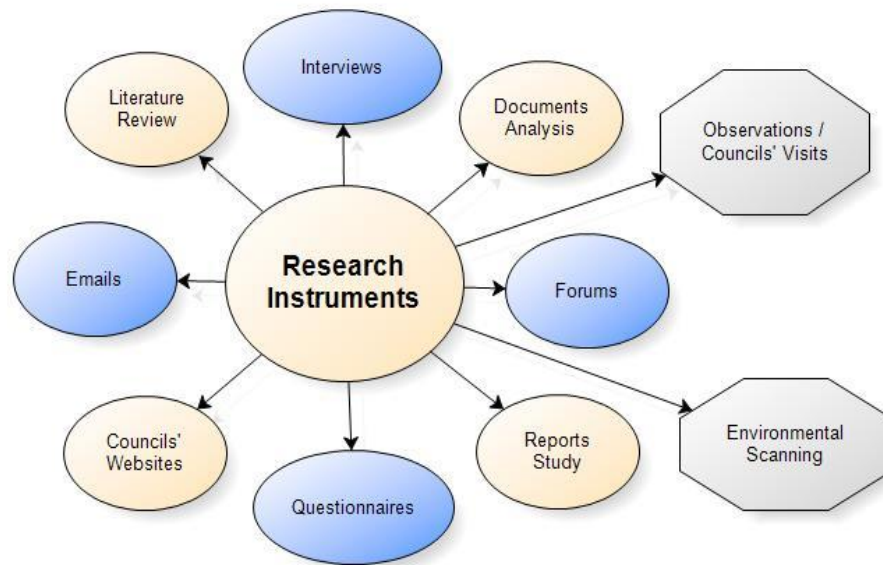


Figure: 3.1 (Research Instruments and Key Techniques of Data Collection)

Source: Nasrullah Khilji (Fieldwork Data Collection and Analysis)

In this study, the literature review was considered as a tool to build evidence about research gaps and to address the research key propositions. The literature review and secondary data were applied as a source that helped the researcher to prepare the interview questions and also as source of data that was applied as a comparative tool. Semi-structured interviews were used to capture rich information and first-hand knowledge from local planning authorities. Interviews were expected to be a rich source of information and personal insight (Graham, 2011). The researcher used the participating local authorities as a grounded source of information using the semi-structured interview approach as a primary data collection method.

The interview technique was the most flexible tool in this study to enable the researcher to gather data that provided insight by encouraging the participants to reveal more data on the subject while maintaining control over the conversation. The purpose of interview was to allow the researcher to enter into the other person's perspectives. As suggested by Patton (2002), *'interviewing begins with the assumption that the perspective of others is meaningful, knowable and capable to be made explicit'*. A semi-structured interview was in a conversation format, steering by the interviewer to cover certain previously identified issues within a topic predetermined by the researcher (Jankowicz, 2004).

3.2.4 Sources of Information

From each participating local authority the researcher interviewed three to four persons in different positions to carry out the case study. It was not strictly the same job position for each authority. This gave opportunities to confront diversity and to consider this a positive form of inquiry. Other data such as the researcher's observations during councils' visits and secondary data from the council's planning and development reports, council's website and consultant's review reports were used to help the researcher to comprehend the UK local government planning system.

The fieldwork was carried out to collect and analyse both secondary and primary data. For reading and analysis as secondary data, useful documents such as planning system reform consultation 2011; the Killian and Pretty planning review report 2008, along with the department of communities and local government's consideration about planning report 2009; local government ICT strategies 2011; planning portal blog and national planning policy framework 2012, were examined. The NPPF-2012 report highlighted the planning system reform to make the planning system less complex and more accessible, to protect the environment and to promote sustainable growth. The use of mixed methodology provided evidence to understand the planning system in the context of the socio-technical system in the UK local government.

3.2.5 Exploratory Study for Process Modelling

A preliminary process modelling/ pilot study was conducted at an early stage of this research (see chapter four for detail (Ch-4)). The pilot study provided a firm foundation for the major research fieldwork to carry out main study (see chapter five for more detail (Ch-5)). The purpose of conducting the preliminary/pilot study was to gather initial insights about the key factors that influence the efficiency and effectiveness in planning system transformation towards smart and sustainable development. This preliminary/pilot study also aimed to gain more understanding about emerging technologies and knowledge policies within the planning system.

The fieldwork was initially commenced in Bedford Borough Council (this council later being regarded as the pilot study). This investigation was planned to identify the functions of ICTs in the broader perspective of knowledge management in the local government planning system. Bedford Borough Council provided good orientation, but in practice proved more difficult than envisaged to realize a full in depth study in this setting. The Bedford Borough Council was in a transition period to unitary status during this study fieldwork i.e. 2009-2010, so there were constraints on getting into levels of greater detail. It was then decided to expand the field study area to include Central Bedfordshire, Milton Keynes, Luton Borough and Northampton Borough Council in addition to retaining the contact with Bedford Borough Council.

A new organisation by the name of SEMLEP was established in South East Midlands in 2010 for economic reforms that was selected by the researcher for fieldwork. These five participating local authorities' study constituted the main study to carry out investigation during this research work. The main study (still with an 'exploratory' outlook) has tried to achieve a comprehension of the influencing knowledge factors in context of the planning system transformation. The respondents from participating local councils were among those working in the planning department at senior level. This study made an attempt to observe, understand and analyse the planning system for key public services that are frequently accessed.

3.3 Justification for Research Methodology

The key objectives of this research study were concerned to critically analyse the impact of knowledge management towards smart and sustainable development. A mixed methodological research was selected to answer key research question, which could not be satisfied by qualitative or quantitative approaches alone. The mixed methodology was considered to use multiple research methods for data collection. The research methodology was used to inspire the conceptual and theoretical approaches with empirical techniques. A number of factors led to the consideration of a mixed

research methodology in this study. Some of the major rationales behind this research methodology are summarised below to provide a justification:

- I) The first reason for selecting the mixed methodology was the need for exploratory study to identify, understand and analyse the key themes.
- II) The second reason behind the preferred methodology, was the actual research requirement for investigation from 'As-Was' to 'As-Is' planning system transformation and then from 'As-Is' to 'To-Be' state.
- III) Another reason was to take advantage of the fact that the data was collected in small samples in the specific planning situations studied, rather than through mass participation with mailings or over the telephone. It was intended to provide broader and richer descriptions, since this study required to gain a better understanding of knowledge based planning system.
- IV) The fourth reason for selecting the research mixed methodology was because of the main focus of this study on the social, organisational and cultural concerns of emerging technologies rather than technical concerns only. The hybrid socio-technical system was therefore examined by collecting and analysing data from various channels to produce reliable evidences.
- V) This research study considered it necessary to investigate the planning system in a real life situation with organisational cultural perspective in order to better understand the planning system. A mixed methodology with an exploratory design approach was preferred as the most suitable notion on planners' individual experiences in social, economic and environmental context.
- VI) A mixed methodological approach was considered to investigate and understand facts about which little is yet known around planning system reformation towards sustainable development.
- VII) Another reason for selecting a mixed research methodology was because of its assistance to collaborate between quantitative and qualitative data in social, behavioural and human sciences perspective to narrow the approaches and collaboration to research enquiry.

- VIII) The chosen methodological approach was found helpful as the preferred mode of understanding in the real life situations. The field data was collected by using a quantitative survey instrument followed by interviews to collect qualitative data in order to learn more detail about planning responses.
- IX) The mixed methodological research encouraged the use of multiple hypotheses rather than the typical association of certain patterns for quantitative researchers and others for qualitative researchers. It stimulated the thinking about a paradigm that might encompass both quantitative and qualitative research, such as pragmatism or using multiple paradigms in research study.
- X) The reason for choosing the research mixed methodology was very practical in the sense that the researcher was free to use all methods possible to address a research problem. It was also practical because researcher could address identified challenges and key problems using both numbers and words.

It was assumed that knowledge of reality was gained through social constructions such as language, consciousness, shared meaning and other artefacts (Klein and Myers, 1999). This research methodology with constructivism and realism paradigm allowed the researcher to increase the understanding of the social challenges faced by the local authorities. This study was therefore, well matched with the mixed methodological approach that examined the realities about the social world (Lowery and Evans, 2004).

3.4 Using Evidence to Model Solutions: An Iterative Process

The data evaluation process was undertaken within the research framework. The researcher remained in good communication with key participants during the data analysis and synthesis. This was imperative for data evaluation process in order to avoid the complications during the verification and authentication of research outcome. The recap interviewee sessions were carried out for data validation. The researcher revisits to the participating councils was part of data evaluation to capture their opinion about the proposed pragmatic models.

The research study participants' views and their feedback were collected to evaluate the research results in person. A few days prior to each feedback meeting, an email with attachment or telephone call (where required) was made to core participants. The email usually included all the information related to the data endorsement subject. The proposed pragmatic framework's features with set of its key elements were provided to the participants for their views, responses and judgements in general. The advantage of sending the research report before interview was to give sufficient time to the participant to gauge the provided questions to be in a position to give suitable feedback.

Another purpose was to save time during the interviews by being able to confer the interviewees' opinions straight away. On the day of each revisiting meeting session, the researcher gave a brief presentation about the fieldwork development. The area under discussion for investigation was clarified regarding the researcher's objective to investigate the planning system transformation. The data evaluation process played a key role to confirm the reliable data as well as research appraisal for data validity. Some of the interviewees in the evaluation process included senior planning executives who were also interviewed later during the primary fieldwork. The rest of interviewees included those, who were recommended by their senior level staff as the researcher always wanted to be introduced to some key planning officers in their departments. The interviewees were assumed to have the experience and to be available to participate in the research framework feedback interview session. The research data collection, analysis, synthesis and evaluation was carried out in the 4-phases as discussed below.

3.4.1 Phase – I

A preliminary knowledge based planning system framework was developed during the pilot study, which was named 'CMT-Model'. This framework was elaborated from literature review, existing conceptual and theoretical models and the empirical data. The adaptation in the proposed framework was continued by examining planning system transformation from 'As-Was' to 'As-Is' state. According to the collected field data and their analysis, it became vital to evaluate the conceptual and theoretical

frameworks. The set of various supportive and preventive knowledge factors were identified during the preliminary study (see chapter five for detail (Ch-5)).

The data evaluation process was carried out by conducting interviews with participants, who were experts in the local government. The researcher shared the idea of conceptual framework to discuss with them the key identified knowledge factors. Once the framework was presented, the discussion began to validate its usefulness for planning system transformation towards smartness and sustainability. The consulted experts have shared their critical analysis with the amount of detail captured in the research proposed model. The researcher also reviewed the literature and existing theoretical models to further strengthen the research outcome. The field experts and academic specialist were consulted for the necessary adjustments in the framework by understanding the issues related to knowledge based planning system.

3.4.2 Phase – II

The identified knowledge factors and main groups of tacit and explicit domains for both supportive and preventative knowledge factors were evaluated by planning process experts. The research participants to evaluate the data were within five participating local councils: Bedford Bough Council (BBC), Central Bedfordshire Council (CBC), Luton Borough Council (LBC), Milton Keynes Council (MKC) and Northampton Borough Council (NBC). The respondents stated that the main and sub groups of knowledge factors as identified from fieldwork, represent a comprehensive and well-organised set of supportive and preventive elements.

In the second phase of data evaluation process, the researcher realised that the identified knowledge factors would be valuable to propose the pragmatic framework. This process of validation also provided valuable information by placing some emphasis on relationships between key factors to develop the modified framework. This approach has helped the researcher to evaluate the importance of key identified factors for further improvements to achieve the future contemporary 'To-

Be' state. The experts' opinions and feedbacks within five participating local authorities were collected on the proposed framework application in real life.

The data evaluation process was carried out to resolve the identified conflicting issues. The researcher realised from the participants' feedback that different environments place a slightly different emphasis on preferences for the knowledge tacit and explicit supportive and preventive knowledge factors in cross data analysis. The cross data analysis from the research study provided a solid base in data evaluation to develop and propose an integrated knowledge based planning system (see Appendix-A and Appendix-B).

3.4.3 Phase – III

The research validation process within five participating local authorities was conducted through research study data analysis, fieldwork results and key findings by examining the necessary decisions to ensure proper planning system functioning and following up. Some research questions were asked from participating planning officers to verify the results gained in response of research key questions during the field interviews. The questions in the evaluation interviews were usually open ended and the planning officers answered them by talking from their own experiences without restraint within their specific working environment. During the data evaluation process, some of the questions asked about the relevant information in structured way. The responses from interviewees added certainty to the research results.

For each knowledge factor within the research study structure, a question was asked from the participating council officers about the importance of key identified knowledge factors. The answers included a discussion on why the identified knowledge factors need to be incorporated in the planning system's structure (cross data comparisons). The planning officers provided the relevant answers for most of the knowledge supportive and preventive elements from their individual experiences. However, they also sometimes argued about the usefulness of the knowledge management policies as applied in the development of knowledge based planning

system. The case study data analysis provided facts about the knowledge key elements, which were dedicated to examine the planning system reform towards smart and sustainable development.

3.4.4 Phase – IV

The researcher structured the data evaluation process by applying three strategies during data validation process such as audit trail, triangulation and persistent observation. This triangulation approach was used to validate and obtain the participants' comments with regard to the overall outcome from research study. A brief document summarising the overall main findings of the research was sent to eight active research participants during final phase of data evaluation process to verify and assess knowledge factors. This phase of data valuation was conducted for clarifications and the researcher personal anticipation for data reliability and validation. A summary of the research outcomes were presented to key participants in order to receive their comments and feedback for research final assessment.

Some of the research participants were not very much convinced initially that the idea of implementing the proposed pragmatic framework was something they would apply in their planning system. But as soon as they looked into the fundamental concepts and the possible scenarios of transformation towards sustainable development, they considered it of great value. The researcher also discussed in detail that the key factors identified within this research study were vital to enhance the planning system performance. In addition, the researcher made clarification about the documentation and transferability of the experiences discussed as lesson learnt (see chapter eight for detail (Ch-8)).

As part of the final phase of data evaluation process a final survey was carried out within participating councils. From feedback results, the researcher believed that the research outcomes could be applied for the implementation of proposed system in which the main beneficiaries were both the local government and citizens. Most of the participating planning officers stated in their statements that the proposed framework approach was straightforward to consider and understand. The major

concern according to them was corporate culture to create a relationship towards knowledge management among planners. It was believed that knowledge based planning system transformation required council capacity, leadership vision and their staff competency.

3.5 Data Assessment Methodology

The data assessment methodology for quality and validity was not straight forward due to a mixed methodological approach of this study. Unlike quantitative research, it is rather difficult to check the reliability and validity in mixed methodology with both quantitative and qualitative methods (Kumar, 2010). Silverman (2009) stated that the data assessment deals with the concept of reliability, the question of whether or not some future researchers would be able to repeat the research and achieve the same results. Bryman and Bell, however, argued against the concept of reliability in qualitative research, as it was impossible to freeze a social setting (2007). One way to satisfy the data assessment methodology criteria was by making the research process transparent (Silverman, 2009).

The data assessment methodology was considered as the degree to which a data valuation tool produced stable and consistent results in this study. Data quality was ensured in several ways, using different types of analyses such as frequency counts (see chapter seven (Table 7.4)). In this research study, the researcher explained the research fieldwork in as much detail as possible to explain better foundation for fieldwork transparency. Starting from the beginning of this research, a log book in Excel sheet was maintained to make sure all considerations of the research were being documented appropriately. The interviews were recorded, and interview transcriptions were done very carefully in word processor, by listening to the recorded voice repeatedly and concurrently with the written transcript (see for detail as shown in Appendix: D-1 'Section D-1.4').

3.6 Data Credibility and Dependability

An audit trail and persistent observations were conducted along with triangulation technique to keep proper record of all transcripts to retain empirical data evidences. The collected data and their transcriptions were maintained to keep them in safe folders for future data analysis and synthesis. Annual progress report was conducted annually, which were successfully submitted to the University Research Degrees Sub-Committee on annual basis for data credibility and progress review. The researcher maintained an Excel log book to review data record and research activities on regular basis for data credibility. The MS Project software was used for scheduling, managing and monitoring the fieldwork progress.

3.7 Chapter Summary

This chapter generally outlines the research methodology to ensure that the most appropriate research design and procedures are chosen to address the research question to achieve research set objectives. In the qualitative and quantitative research context, the range of research strategies are discussed with mixed methodological approach and research design. In this chapter, the researcher explained what was required to ensure the quality and rigour of this study outcome as a mixed research methodology and the use of proposed pragmatic framework. This is done by discussing the justification for choosing mixed research methodological approach followed by the strategies and measures adopted to conduct data evaluation for validity, reliability and credibility. The chapter indeed provided the foundation for selecting a suitable research strategy by describing the suitable approaches to be adopted for data collection and analysis to validate the key research methods in next chapter (Ch-4).

CHAPTER 4**METHODS AND
PROCEDURES OF
INVESTIGATION**

The purpose of this chapter (Ch-4), is to express the details of the key methods and procedures undertaken for the research field data collection and analysis. It is considered essential to include a wide range of research methods during the research fieldwork. An environmental scanning of planning system within participating local authorities was carried out to collect both primary and secondary data. A mixed research methods was applied to rationalise both qualitative and quantitative data. The collected data was reinforced by literature review with conceptual and theoretical frameworks. The research data was collected and analysed from a wide range of sources including one to one discussions, structured questionnaires, unstructured interviews, online survey forums, email correspondence, consistent observations, research publications, group discussions and local government public documents.

4.1 Data Collection: In General

The fieldwork data was collected from the five participating local authorities to examine the influence of key identified knowledge factors. The literature review, environmental scanning and case studies were used to collect research data under an exploratory research methodology in a flexible research design method. The collected data was later analysed in three stages: literature analysis, current trends and key propositions analysis. The collected data was evaluated for validation by applying techniques of audit trail, triangulation and persistent observation to ensure data reliability for quality outcome.

The literature review in chapter two provided the researcher with ground to understand the research themes, which were found helpful for primary data collection. The research fundamental propositions were used that played a significant role to assess the influence of knowledge based planning system as the major research theme. The research theme was applied as an appropriate approach to design, develop and apply a mixed research methods for data collection and analysis. The secondary data was collected from literature review, which provided a ground to address major research questions, objectives and challenges (Gill and Johnson, 2010).

The information from the literature review was initially used to develop the preliminary research study for primary data collection (Ch-6). The key knowledge factors were identified from the preliminary study, which were further examined to carry out the main study (Ch-7). In the advanced phase of fieldwork, researcher considered a mixed methods approach to collect data using questionnaires, forums and interviews. Apart from the main methods of data collection, observation and visits to local planning departments contributed to collect data. The purpose of fieldwork during this research study was to ensure that the researcher established an overview of existing planning system. The main research method applied for primary data collection was one to one pre-scheduled interview approach. Interviews were widely used in social science research as a form of data collection (Gill and Johnson, 2010). Data collection was considered in terms of data access, sources of information, analysis and use of key instruments in this study.

A structured questionnaire method was used to collect primary data. The aim of a questionnaire was to find out what respondents think, do or feel. The open and closed questions were used in the questionnaires and field interviews to collect an appropriate set of data. The closed questions were used to obtain factual answers, which could be selected from a number of predetermined alternatives that were easy to analyse, while the open ended questions provided respondents with the opportunity to voice personal opinions in relation to the topic, using their own words (Hussey and Hussey, 1997). Creswell (2005) explained the steps in research methods, which was applied for both quantitative and qualitative data collection as shown in the table below (Table 4.1).

Data Collection Process: Qualitative and Quantitative Data

Research Phases	Qualitative Data Collection	Quantitative Data Collection
Sampling	<ol style="list-style-type: none"> 1. Purposeful sampling strategies 2. Small number of participants and participating councils 	<ol style="list-style-type: none"> (i) Random sampling (public documents) (ii) Adequate size to reduce sampling error and provide sufficient power
Permissions	<ol style="list-style-type: none"> 1. From individuals providing access to council data 2. Institutional review experts 3. Individuals participation 	<ol style="list-style-type: none"> (i) From individuals providing access to sites (ii) Local government review (iii) Individuals opinion
Data sources	<ol style="list-style-type: none"> 1. Open-ended interviews 2. Open-ended observations 3. Documents 'public domain' 4. Audio-visual materials 	<ol style="list-style-type: none"> (i) Instruments and methods (ii) Checklists (iii) Public documents review
Recording the data	<ol style="list-style-type: none"> 1. Interview protocols 2. Observational protocols 	<ol style="list-style-type: none"> (i) Instruments with scores / codes that are reliable and valid
Administering data collection	<ol style="list-style-type: none"> 1. Attending to field issues 2. Attending to ethical issues 	<ol style="list-style-type: none"> (i) Standardization of procedures (ii) Attending to ethical issues

Table: 4.1: Data Collection Phases
Source: Adopted from Creswell, 2005

With prior approval from the participating respondents, field interviews were recorded for further review. This was helpful approach to let the researcher be free from continuously taking notes during the interview session. It was also found helpful to keep interviews recorded to review important points later and to allow time to keep focused on the major issues being discussed. Interview recording was found helpful to ensure that information obtained would be available in its original form for future use and data evaluation. According to Yin (2009); *'tape recorders provide a more accurate rendition of any interview compared to any other method'*.

The recorded interviews were later transcribed into descriptions but electronic files were kept saved in computerised audio folders for future data reference. However, the field interviews were recorded but researcher also preferred to take some notes of key points during the interview sessions that helped to serve numerous research drives. This is highlighted by Patton (2002), *'note taking is helping the interviewer to formulate new questions as the interview moves along, helping to facilitate transcription and data analysing processes'*. Interviews were conducted among research participants within participating local authorities, each of which lasted for about 60-90 minutes.

4.2 Sampling

This research study was initiated to collect data in many different ways to investigate technological trends across five participating local authorities. For each of the categories and dimensions earlier identified and included in the initial framework, the researcher looked within group similarities coupled with intergroup differences. The researcher decided to conduct the comparison of data by cross case study analysis, which was carried out in two stages to achieve a quality of data validation (Ch-8). The reason for cross case data analysis was to convince the researcher to look beyond initial impressions and see evidence through multiple lenses (Eisenhardt, 1989).

The sampling frame in this research study was South East Midlands to collect and analyse data. The South East Midlands was chosen for sampling by the researcher because of its national growth rating. *SEMLEP recently received over £79 million to*

invest in this area from 2015 and 2016 as part of a Local Growth Deal to deliver Strategic Economic Plan. The South East Midlands home to the UK's fastest growing city, Milton Keynes, and the UK's second 'Garden Town' at Bicester in Oxfordshire (SEMLEP, 2015). The researcher got involved in the South East Midlands Local Enterprise Partnership, being a resident of Milton Keynes and working in the Cranfield University Business Innovation Centre. The sampling was primed to reflect the strategic infrastructure development for economic growth in the sub region. When the purpose of research is to develop a theory rather than to test it, the theoretical sampling is the most appropriate technique to gain a deeper understanding of the theme (Marshall and Rossman, 1995).

The researcher decided to involve participating councils from the South East Midlands region in data collection. A detailed list of five participating local authorities' field survey that contributed in this research study and a brief description of all participants' designated titles are shown in the appendix (see for detail Appendix: D-1 'Section D-1.6'). The major methods and techniques applied during the field data collection (primary and secondary) are revealed in the following diagram (Figure 4.1).

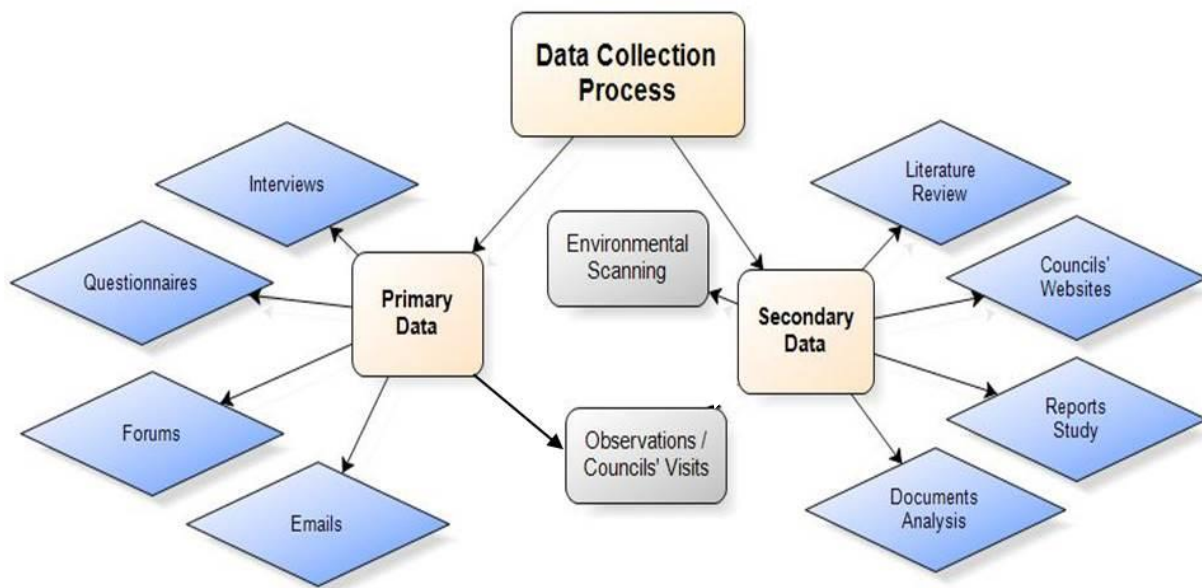


Figure: 4.1 (Data Collection Process with Primary and Secondary Sources)

Source: Nasrullah Khilji

4.3 Data Collection and Analysis

The data collection and analysis was more than simply collecting data from both primary and secondary sources. It indicated that data would be integrated, related and mixed at various stages of this research study. To achieve an independent estimation of key indicators by enhancing the validity of conclusions related to an evaluation question, which was referred to as triangulation. A triangulation was conducted among major participants for the overall credibility of the research study. For an appropriate data analysis, the researcher collected qualitative data and transformed it into quantitative data by counting the number of codes or themes (see chapter six (Table 6.1 and 6.2)).

The researcher applied coding approach for data analysis. The coding according to Collis and Hussey (2009) involves connecting categories and sub-categories on a more conceptual level. Selective coding was a process of choosing one category to be the core category and relating all other sub-categories to that category. Open coding as described by Strauss and Corbin (1998) was the analytic process through which concepts were identified and their properties and dimensions were discovered during data analysis.

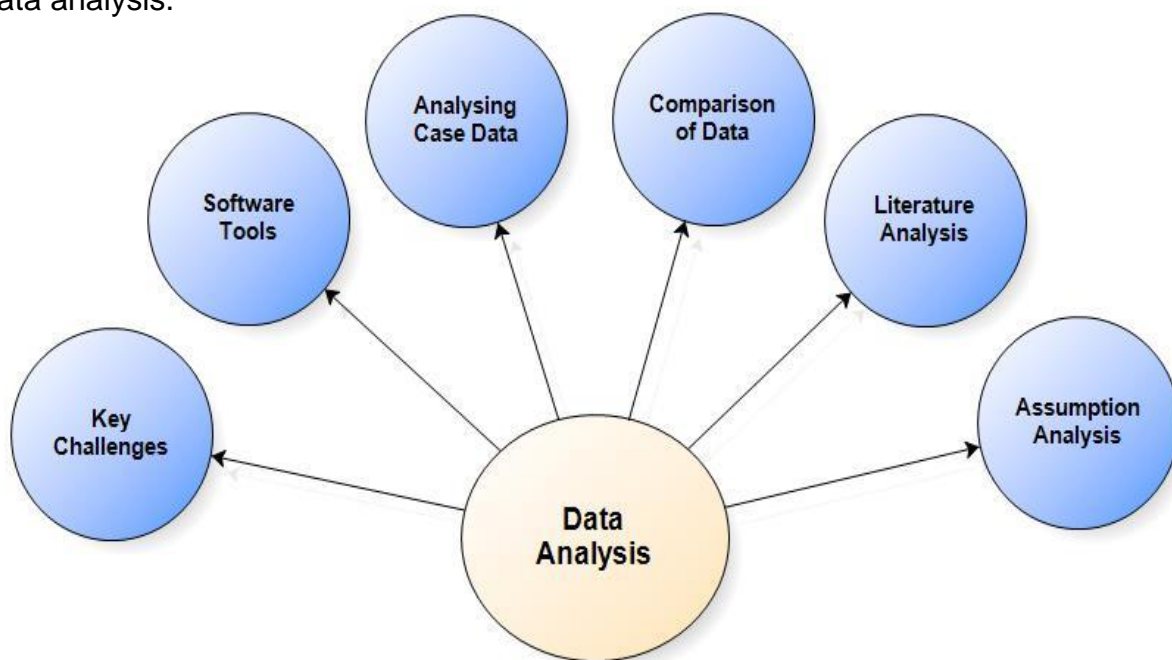


Figure: 4.2 (Data Analysis Process and Techniques)

Source: Nasrullah Khilji (Fieldwork: Data Collection and Analysis)

Generally the cross data analysis in the pilot study started when the researcher put all the codes and sub-codes together to cluster them using a tabulation method. This tabulation was continued until the researcher reached at a satisfactory level of codes and groups of sub-codes themes in the main study (see chapter six for detail (Table 6.1 and Table 6.2)). In the later phase the main and sub codes were classified in separate themes as researcher categorised these themes in supportive and preventive knowledge factors. The major methods and techniques applied for research data analysis are shown in the above graphical illustration (Figure 4.2).

4.4 Data Collection and Analysis (Key Challenges)

The combination of qualitative and quantitative data analysis has various challenges and the top most is related to tabulating the collected data. The major issue in mixed data analysis is how to deal with massive amount of qualitative and quantitative data at the same time to interpret and formulate various data. The second issue is to adopt a strategy to reduce and condense the amount of data to complete a refined data theme. The challenges of data analysis lie in how to make sense of a vast amount of data (Patton, 2002), and also because the qualitative data itself is in the form of words that can have more than one meaning (Neuman, 2011). Another challenge that adds to the difficulty is that the techniques of qualitative analysis itself are still being developed (Blaikie, 2000).

In this research study, the shaping assumption from data analysis was one of the key challenges for researcher during the fieldwork. According to the new emergent themes and relationships, the preliminary research framework was modified. The modified framework was compared with the evident new themes and relationships between variables and the evidences from each participating local authority in order to assess how well they fitted within this study. Indicated that research data analysis was concerned with describing what things mean and noting regularities, patterns, explanations, possible configurations, causal flows and propositions. It was challenging to classify similarities in the literature and to identify common ties within a specific phenomenon during data analysis.

4.5 Software Tools

The researcher obtained help in collecting, presenting and analysing research data during fieldwork by using software tools such as: QSR NVivo, MS Excel and MS Project. The thinking and decision while coding data was wholly done by the researcher as the software tools were mainly applied to assist the fieldwork by managing collected data, ideas, models, queries and reports. The software tools applied during the research field study were widely regarded and accepted as a new advancement in software development (Bazeley and Jackson, 2013). QSR NVivo (Qualitative Data Analysis Software) supported research structures with new processes (Bazeley, 2007; Bazeley and Richards, 2000). Qualitative computing has become widely accepted, even required packages have become more sophisticated (Richards, 1999).

The researcher's understanding about gathered data was kept evolving as the researcher reread the written cases to prepare a better interpretation. However, it was a challenging task during case study analysis to maintain consistency and track record relationship in data interpretation and generating codes and sub-codes. Using QSR NVivo-9 was very helpful and supportive in organising and managing data during the research both pilot and main study.

To input data to software tool, the researcher decided to write down interviews as a narration. However, during the interview some terms were not clearly understandable but that did not affect data preparation as the data analysis was done in a way that the meaning of what was said or referred became more significant than a particular term. Interview transcription took a long time as it was a tedious job to write down all conducted interviews word by word. The data transcriptions were not only important for research analysis but also applied for validation scrutiny purposes. The descriptive files were then imported to NVivo for data analysis and framework processing is shown in the following QSR NVivo-9 screenshot image (Figure 4.3).

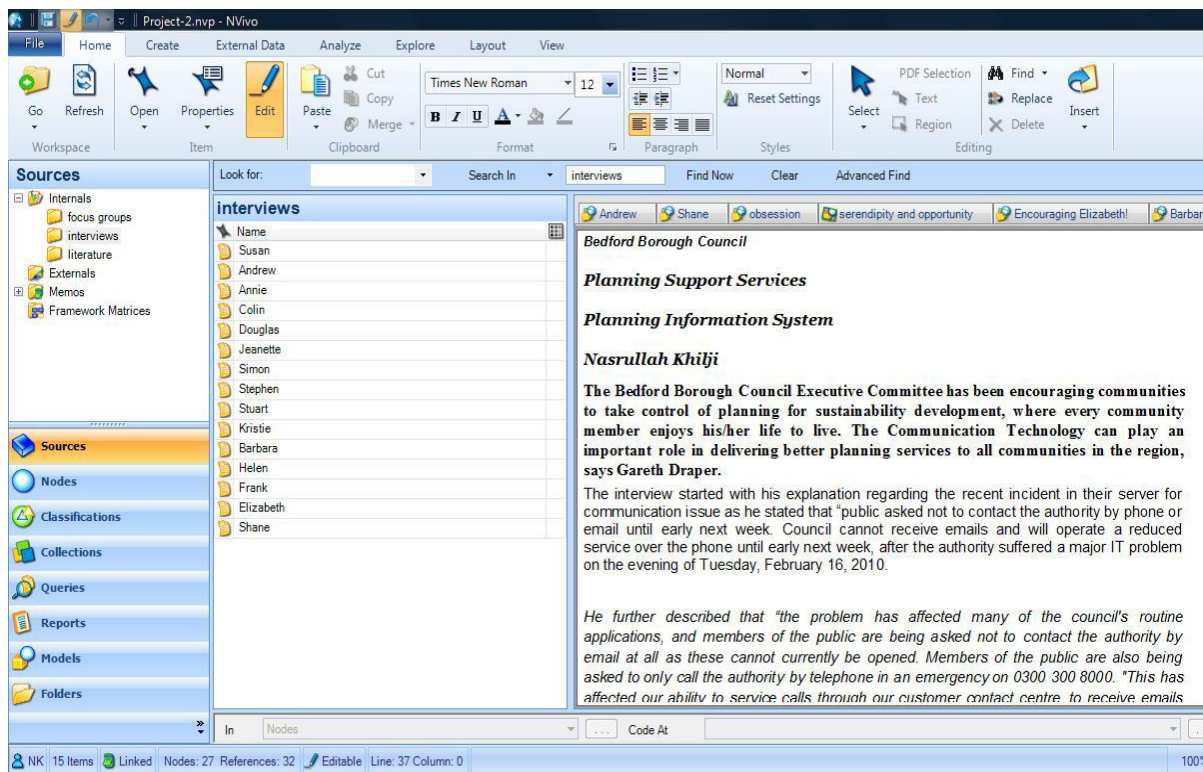


Figure: 4.3 (Screenshot of NVivo-9 for Data Management and Analysis)

Source: Nasrullah Khilji (QSR NVivo-9: Software Application)

4.6 Data Analysis (Main Study)

Within case study analysis, the researcher assigned a code to a term or sub-codes to a group of terms that give evidence towards identifying key knowledge supportive and preventive knowledge factors in planning system. These codes and sub-codes would be applied as predetermined codes when analysing each of the five local authorities' planning systems. During the case study analysis, each participating local authority was considered as a separate identity and in each case multiple data collection methods were considered. For main study data analysis, the codes and sub-codes were grounded from data gathered during fieldwork. The researcher tried to uphold the data track for stability by steady assessment and re-tracking the cross case analysis.

All codes and sub-codes from the case study were applied as a pattern guideline to assist the research study findings in tabulation subsequence (see chapter six (Figure 6.3a, Figure 6.3b and Figure 6.3c)). The terms for different codes were dynamic in nature, although these were applied for different templates, but as the coding process

progressed, the researcher's understanding evolved and sub-codes were designed under the category of main codes during exploratory case study. The main codes were required to generate sub-codes during analysing each separate case using NVivo. The screenshot of NVivo shows below the case study data analysis method (Figure 4.4).

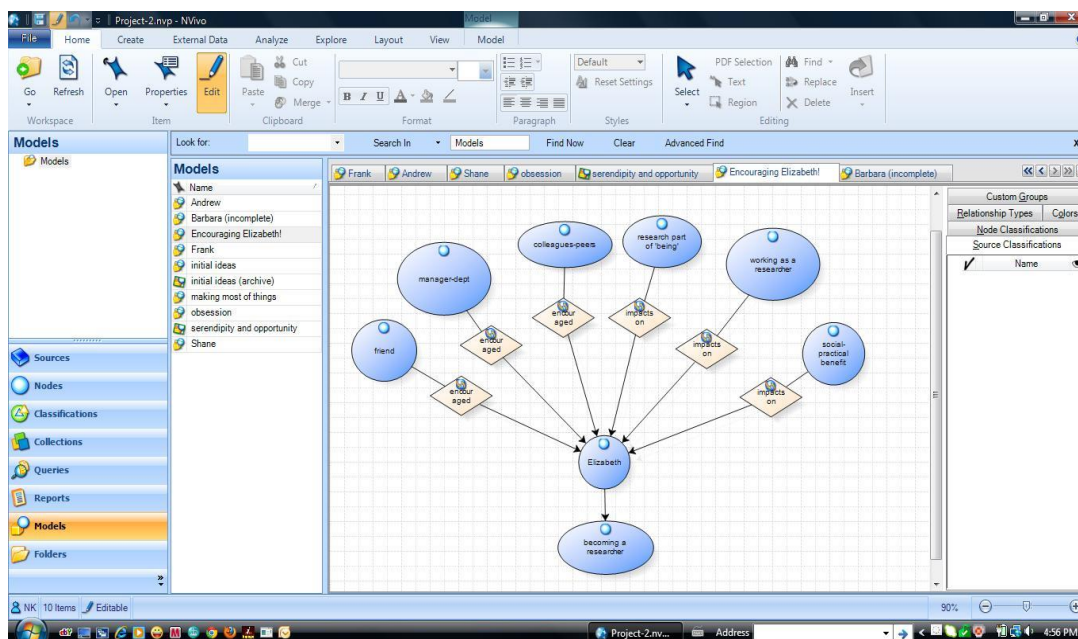


Figure: 4.4 (Screenshot of NVivo-9 Software for Data Analysis and Coding)

Source: Nasrullah Khilji (QSR NVivo-9: Software Application)

The fieldwork data was analysed to organise them between supportive and preventive knowledge factors. The gathered data was synthesised to develop a clustered matrix to group relevant responses from research participants (see chapter seven (Ch-7) for detail (Table 7.4)). The fieldwork data analysis provided a documented distinction from collected responses and statements. The clustered matrix aimed to address the key objectives of this study, so that the significance of main research propositions could be addressed appropriately. The clustered matrix set up comparisons between different ideas and views of participants. It was perceived role-ordered and conceptually-ordered for a correct data comparison and benchmarking among five participating councils. The cross data analysis and findings about supportive and preventive knowledge factors are shown in the section of appendices (Appendices A-1 to E-1).

4.7 Process and Chronology

The process and chronological report presents the summary of this research project progress from starting date 'July 2009' to its completion date 'May 2015'. It was decided by the researcher to adopt an exploratory approach with flexible design under the research paradigms consists of various phases to complete the project successfully. This timeline statement with graphical illustration about the research study progress actually corresponds to the total timeframe in exploring an integrated knowledge based planning system renovation in the UK local government as shown below (Figure 4.5).

The timeline for this research study was based on the steady progress achieved during the work plan of the programme sheet as per the project agreed schedule. The initial study began with attendance on the research methods modules (60 credits: 2007-2008). The proposal was submitted to and approved by the Research Degrees Sub-Committee in June 2009 after receiving a confirmation letter.

A briefing and brainstorming session was carried out soon after. The field work was initiated by contacting the Bedford Borough Council's planning department to conduct the preliminary research work in July 2009. The researcher realised within the first six months that the research field area and data collection sources were required to be expanded. By the end of 2009 and during first quarter of 2010 four more local authorities were contacted to participate in this study including Central Bedfordshire Council, Milton Keynes Council, Luton Borough Council and Northampton Borough Council. The annual progress report for 2009 and 2010 was submitted in the end autumn of 2010.

The MPhil to PhD transfer report was prepared and submitted during the beginning of 2011, which was a success. After the successful up-gradation from MPhil to PhD in spring 2011, the researcher continued to carry in depth research investigation among the five participating authorities in South East Midlands. The preliminary field study provided a platform to explore an integrated knowledge based planning system by evaluating the ICT strategy and innovative planning system with five participating local

authorities. Information and Communication Technologies have been observed as essential tools for knowledge sharing to advance performance. The field investigation was continued during 2011 and 2012 to examine the use of emerging technologies in the UK local government. In particular, the planning system reform was studied to analyse how knowledge sharing, effective coordination strategies and stakeholders' participation were restructuring in the planning system.

The researcher decided by mutual understanding with his main supervisor to analyse the 'As-Was'; 'As-Is' and 'To-Be' states of planning system within participating planning local authorities during 2011 and 2012 to explore how planning system could be moved towards smart and sustainable development. A substantial piece of work towards the thesis major challenges was successfully continued during 2012 and 2013 to achieve the following key objectives and milestones:

- 1. Research investigation revealed the key knowledge factors that affect the performance of human and technological resources in the internal as well as external environments of planning system.*
- 2. The research study produced a model to strategic planning system for sustainable development while providing value to the local authorities for future investigations.*
- 3. This research study continued to analyse the influence of other variables such as organizational structure, senior leadership, staff training and motivation, technological exploitation, legislation, vision, knowledge sharing and effective coordination strategies within planning system.*
- 4. The outcome of this research project provided a contribution in the better understanding of knowledge management policies in the UK local government planning system transformation.*
- 5. The research study made recommendations to help senior management in the local government to overcome existing barriers for sustainable development.*

6. This research study also contributed to the growing body of studies of emerging technologies, the value of information and knowledge management, online planning services, e-government and the research for sustainable development in local community affairs from international publication.

Chronological Chart 2009 - 2015

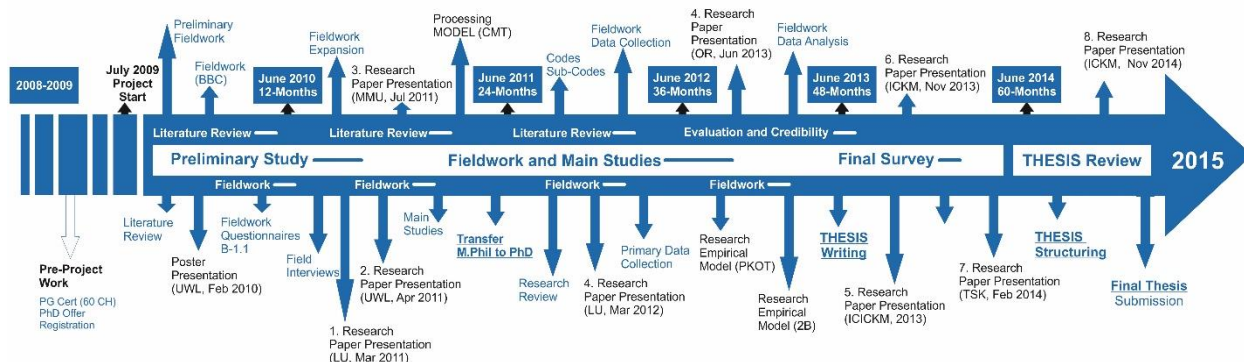


Figure: 4.5 (Chronological Chart from PhD Thesis Project: *Initiation to Closing*)

Source: Nasrullah Khilji (For enlarged size, see Appendix G-1.1, pp: 384)

In 2014, the final survey was suggested to collect views from senior level management to evaluate the research key recommendation in order to validate its developed research frameworks' proposals. It was intended to analyse research outcomes for technological implementation as suggested to improve transparency where more time to decide applications was genuinely needed, and to ensure that participating local authorities get the support they need in order to further improve their planning system.

From field work, data analysis and respondents' statements, it was observed that knowledge management in planning system demanded commitment from top management. The senior planners were required to be involved in knowledge sharing while the council got interested in spending significant resources towards implementing knowledge management initiatives. This study contributed to assess the local government management performance dependent on the knowledge management initiatives with human and technological resources' merger for efficient and effective

planning system. The summary of the process and chronology report about this research study timeframe is graphically illustrated in the diagram above (Figure 4.5).

Measuring the impact of knowledge management within local authorities was challenging and it was hard to assess every aspect of knowledge management initiative in a single scale. To track knowledge sharing deployment, activity and value generation across planning system was required to apply assessment at the individual, team and organizational levels. The most important characteristic to consider when defining a knowledge management measure was whether the measuring scale indicated if knowledge was being identified, articulated, shared, transferred, managed, recreated or applied during planning processes.

4.8 Need for the Final Survey

During the final phase of research project, it was decided to conduct a final round survey to find out more about current thinking of planners about their future directions and policy in regard of planning system transformation. Thesis draft was reviewed with an idea to produce results that could enable the planners to do their job better while adopting KM practices. After the draft review and discussion; the final survey format was developed with the mutual understanding of both the main and second supervisors, which was comprised of:

- (i) Interview Questions
- (ii) Online Questionnaire
- (iii) Thesis Summary

As suggested to put the emergent findings, results and propositions together for the participants' clarification. The idea behind final survey format was not only to provide context to those participating in the survey but also to assist them with crystallise settings to clarify what the final report to enquire more precisely.

The researcher worked out with his supervisors on the survey format (interview and questionnaire) in order to ensure that the recipients could understand the questions and would be able to answer them. After the review and approval of the final survey format

the actual fieldwork was initiated while re-contacting active participants in five participating councils. The intention behind carrying out the final round of survey as suggested was to validate thesis work. The research study final round actually focused its specific interest to evaluate the ICT strategy and KM practices in the local government in general and within participating councils in particular (see Ch-9).

4.9 Ethical Considerations

In arranging, scheduling and conducting the research process modelling preliminary study (Ch-6), main research study in chapter seven (Ch-7) and evaluation of field evidences (Ch-8), this study considered to fulfil various obligations in order to meet the ethical standards set forth by the University of West London Research Committee:

- First and foremost, the researcher prepared a project planner with the consent of his main supervisor, so that the chance for misleading efforts was minimized.
- Second, the project planner was developed in a way so that it meets ethical acceptability throughout the research study. The ethical considerations actually helped the researcher to resolve any doubts about some questionable procedures through consultation with potential participants.
- The code of ethics were carefully taken into consideration to set out the professional standards required as per the BCS, ITIL and AIS code of conducts to carry out fieldwork within professional competences (BCS, 2014).
- Third important step was taken in consideration about the protection, surety, dignity and welfare of all participants, as well as those who might be affected by the results of this research study. The researcher therefore decided to take great care about ethical research procedures from the beginning of this project. The ethical considerations were established by ensuring confidentiality, care and sensitivity, permissions and informed consent from key participants during this research study. Written materials outlining the purpose and nature of the study, contact person, formal consent and confidentiality arrangements were designed to be given to each participant or representative prior to interview (Appendix: A-1 'Section A-1.1').

- In this research study, the fieldwork information was usually presented in a format to disguise its primary source. At the start of all interviews or meetings, particular reference was prepared to the anonymity to be provided to each participant. All participants were reminded in writing that their participation as voluntary, that they were free to withdraw at any time, and information supplied by them would be returned on request. In a number of instances assurances were given that audio recorded or written statements would not be attributed to identifiable individuals.

The ethical considerations were taken in great extent to protect the anonymity of participants during the conduct of fieldwork. The research approval and informed consent were part of this study, which were obtained by verbal or written agreements. A researcher periodical entry of all verbal agreements was maintained. All participants in the case study were provided written informed consent in the research prepared ethical fact-finding form (Appendix: A-1 'Section A-1.2 and A-1.3').

4.10 Chapter Summary

In this chapter (Ch-4), the implementation of fieldwork is explained in continuation from the previous chapter of research methodology (Ch-3). The details of the methods and procedures undertaken in the data collection are described in this chapter, in addition to the techniques and plans applied for data analysis. The chronological chart is presented and discussed to illustrate the timeframe of this research study. The justification for final survey conducted and ethical considerations are deliberated in the end of this chapter to provide a firm base for fieldwork 'data collection and analysis' in next part (Part-III) of thesis work comprised of chapter five, six and seven (Ch-5, Ch-6 and Ch-7).

PART – III

FIELDWORK

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CHAPTER 5**MODELLING THE ENVIRONMENT**

This chapter (Ch-5), reports a foundation study that was carried out to explore the theoretical and conceptual frameworks behind observed practice (process modelling study). The examination has informed discussions about how the local government planning system in the UK could embrace the potential of knowledge management to deliver a smart and sustainable approach to physical and urban development. The general environment of UK planning was contextualized in this chapter. First, a number of conceptual frameworks were reviewed to propose a pragmatic framework: CMT Model (discussed in section 5.1 and 5.2). Second, empirical field work was initially conducted at Bedford Borough Council (BBC) as a pilot exploratory study but was later expanded to include four more councils i.e. Central Bedfordshire Council (CBC), Luton Borough Council (LBC), Milton Keynes Council (MKC) and Northampton Borough Council (NBC), which is discussed in section (6.4). These local authorities then provided the locations for the main case study, which is reported later in chapter six (Ch-6).

5.1 Transformation: Planning System

The major focus in this preliminary study was an exploration of the theoretical and conceptual frameworks about the planning system to gain in-depth understanding about enhanced efficiency and effectiveness. This study was carried out to exploit more consciously the scope for knowledge management to transform planning system. A number of political and policy statements offered empirical frameworks that demonstrated the broad evolution of the UK (United Kingdom) planning system in general and in the devolved governments of the UK in particular. The Nonaka and Takeuchi Knowledge Framework (SECI Model) was incorporated as it is a widely accepted construct for KM.

The ensuing discussion illuminated how a model of an integrated knowledge based planning system might emerge, derived from an examination of the current state of the planning system and its continuous transformation. The local government planning system reforms and emerging technologies provided a context for integration. This review was associated with an ongoing study of five UK planning authorities, which when published would provide some evidence as to how efficiency, effectiveness, smartness and sustainability in the planning system could be developed. Combining policy analysis with emerging evidence from practice was leading to a pragmatic framework (CMT Model) highlighting the necessity for Coordination, Motivation and Training as key parameters in any new overarching strategy for KM. This preliminary study identified key supportive and preventive knowledge factors, which would shape an integrated knowledge based planning system from six theoretical models review below (see section 5.2).

The local government planning system reform was observed as a continuous process to enhance efficiency and effectiveness and to offer improved services for sustainable development. A reform in the local government structure in UK was proposed in the mid-1990s by posing fundamental questions on how to organise, manage and determine the delivery of quality public services. In simple words, a fundamental shift became essential in the local government from bureaucracy to responsive management. The reform in the planning system was characterised by low cost

communications and using process innovations and technological advancements to facilitate official transactions. The new policy reform was assumed to reduce the fraud and carelessness, ensures unbiased dealings with stakeholders (MKC, 2011).

The local government planning system transformation was reflected in the proposed research framework mirroring the conventional government structure changing towards smart and sustainable development. Atkinson and Wilks-Heeg (2000) examined how the UK local government sought to respond in a proactive way to a range of important social, political and economic changes. This concept focused on internal managerial concerns and puts emphasis on the separation of administrative jobs in departments, units, offices, specialisation and vertical hierarchy of control. The local government was often characterised as bureaucratic and inefficient to deliver public services. Major objections to local government activities were related to services not being delivered efficiently and effectively (Joseph, 2002). These types of views, which were widely held, reinforced a typical stereotype of the local authorities as bureaucratic organizations.

The bureaucratic structure was always criticized for its rigidity, inactivity of procedures, rendering decision making slow or even impossible when facing some unusual or unstructured case, and similarly delaying change, evolution and the adaptation of old procedures to new circumstances. The bureaucratic structure was also characterised by its procedural inefficiency and over-specialisation, making individual officials unaware of the larger consequences of their actions. The structure of local government was also criticized for a lack of technical competence career advancement (Yilmaz et al., 2008).

In bureaucracy, individual human beings were treated as impersonal objects, where the rule predominates over the individual circumstance or concern. As a result, local government was unable to serve citizens who have preferences and feelings (Chen et al., 2007). The structural changes required involve restructuring, crosscutting and co-ordination missions to provide a more coherent interface between the diffuse set of services in most local authorities. The local authorities also involved the outsourcing of activities (such as residential care for the elderly) where the local authorities were no longer major direct providers (Niskanen, 2007).

The continuous transformation in the planning process framework is necessary because of the information and communication technology advancements and the desirability of initiating knowledge management practices in the local government planning system renovation (Trajkovic et al., 2011). ICT is promoting more efficient and effective planning services, facilitating more accessible local government services, allowing greater public access to information and making the local government more accountable to local communities. The full range of online planning services is observed easily accessible through online planning portals. The planning information system is now accessible through internet, telephone, community centres (self-service or facilitated by staff), wireless devices, smart phones and other communication systems.

5.2 Theoretical Frameworks Analysis

The 'red tape' bureaucratic government structure is considered to be a threat to individual freedoms (Ritzer, 2009). Under the name of 'e-government or local governmental electronic service', a series of efforts are already evolving, which tend to initiate the online internet based service delivery and computer networks into local government administrative actions. Many of these initiatives have conceptualised the challenges and the success factors associated with online electronic service development in different phases. The researcher has examined some seven previous efforts in this area with the purpose of exploring and evaluating the selected fundamental theoretical frameworks in this section. The examination of conceptual and theoretical models led to comprehending the contributions made in the development of empirical CMT-Model (Figure 5.7).

5.2.1 Planning Performance Agreements: (PPAs Model)

Planning Performance Agreements (PPAs) framework is a helpful tool for collaborative working between local planning authorities and planning applicants. PPAs bring together the local planning authority, applicant and key stakeholders from an early stage to work together in a partnership through all stages of the planning application process. This is essentially a project management tool that provides greater certainty and transparency to the planning application process and

decision making (BPF, 2011). However, it is noted that Planning Performance Agreements (PPAs) have not been widely taken up well to date, and there is some cynicism in the development community about the use of this theoretical framework. PPAs can be applied at the right time and for the right development and approached in a way that is proportionate to each new development in communities (PAS, 2009).

The potential of PPAs has already highlighted the increasing focus in the planning system reforms on front loading, pre-application discussions, resourcing and delivery as emphasised in the Killian Pretty Review (see section 5.2.3). The PPAs model has the potential to offer a useful framework for both developers and local authorities to deliver planning decisions for sustainable development (RTPI, 2013). The aim of PPAs is to deliver a development that is responsive to society's needs and has the ability to resolve differences and deliver appropriate development. The planning performance agreements (PPAs) framework was developed to enhance the quality of decision making process within the planning system in order to achieve efficiency in processing the planning application within 6 to 7 weeks from a typical 13 or 16 week target. PPAs model enabled the developer and local authority to manage knowledge for quality services and sustainable development (Andrews, 2010).

An approach to the local council about a large scale development project is initially submitted through the Development Management Section of the Strategy and Development Department. However, when a project is defined, it is likely that it involves officers from other sections and departments. The local authority is committed to effective cross departmental coordination working. As per the PPAs framework all members of the project teams work on behalf of the council in the wider public interest and to secure the best quality scheme delivering the objectives of the Development Plan and relevant policy documents. Planners express their own professional opinions and expertise to provide guidance for the applicant. The guidance is not binding officers to a final recommendation nor overriding the requirement for a formal planning application to be determined without prejudice and within the statutory requirements of current planning legislation (CBC, 2010 and WHBC, 2011).

PPAs is a project management tool that is actually developed to help local authorities and applicants in delivering decisions on planning applications for major developments. In essence, a PPAs is simply an agreement between a developer and a local authority (and potentially other key players, such as statutory consultees) setting out who will do what and when. The PPAs model is designed to address some common problems encountered by local authorities and applicants, such as timescales, resources, and the quality of applications and decisions, by providing a framework and management approach for delivering good quality outcomes. The PPAs have the potential to give developers greater certainty and confidence in the planning process (BPF, 2011). The PPAs model for improved service delivery is shown in the graphic (Figure 5.1).

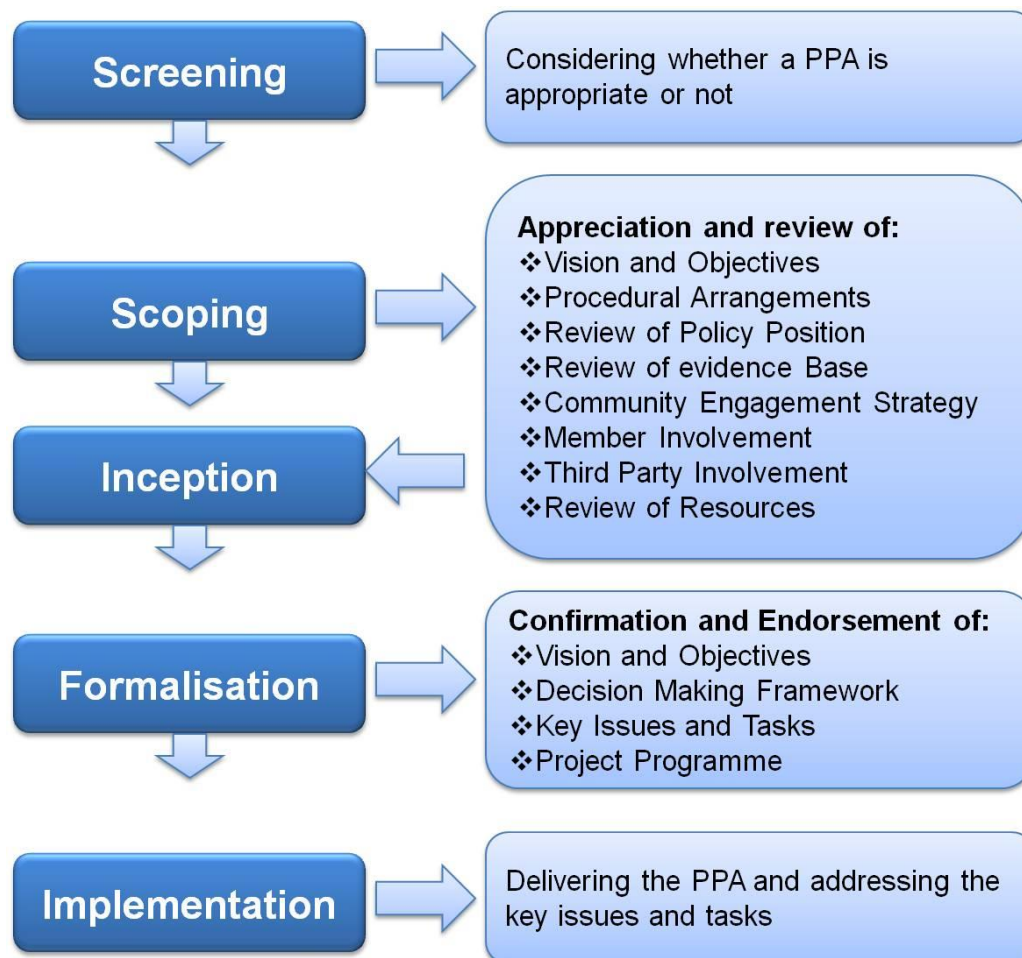


Figure 5.1: PPAs Framework

Source: WHBC, 2011

5.2.2 National Planning Policy Framework: (NPPF Model)

The planning system shapes the places where people live and work. The planning system plays a vital role in building local economy and supporting strong, vibrant and healthy communities. The NPPF model is a reform to achieve sustainable development as one of the key objectives of planning system. This means NPPF promotes sustainable development to ensure better living standards for local communities and value-added infrastructure for future generations (Novakovic, 2012). The NPPF promotes the regional economic development, and champions innovative approaches by which local communities will earn their living in a competitive world. This framework is response to a rising population, which is living longer and wants to make new choices. It is always important for local authorities to respond quickly to the changes that new technologies offer (Clark, 2011).

The National Planning Policy Framework sets out the government's economic, social and environmental planning policies for England. Taken together, these policies articulate the government's vision of sustainable development, which should be interpreted and applied locally to meet local aspirations (NPPF, 2011). According to the draft of the National Planning Policy Framework for the planning system, delivering sustainable development means planning in the context of economic, social and environmental prosperity as described below:

- **Planning for prosperity (an economic role):** use the planning system to build a strong, responsive and competitive economy, by ensuring that sufficient land of the right type, and in the right places, is available to allow growth and innovation; and by identifying and coordinating development requirements, including the provision of infrastructure.
- **Planning for people (a social role):** use the planning system to promote strong, vibrant and healthy communities, by providing an increased supply of housing to meet the needs of present and future generations; and by creating a good quality built environment, with accessible local services that reflect the community's needs and supports its health and well-being.

- **Planning for places (an environmental role):** use the planning system to protect and enhance natural, built and historic environment, to use natural resources prudently and to mitigate and adapt to climate change, including moving to a low-carbon economy.

According to the National Planning Policy Framework, it is necessary that the planning authorities work in collaboration with other local agencies to ensure that their strategic priorities across local boundaries are appropriately synchronized and perceptibly replicated within their planning and development strategies (NPPF, 2012). The Local Development Framework sets out local policies for meeting the community's economic, environmental and social aims for the future, where this affects the development and use of land. The Local Development Framework comprises a suite of documents, allowing individual sections to be reviewed without having to revise the policies as a whole as graphically shown in diagram (Figure 5.2).

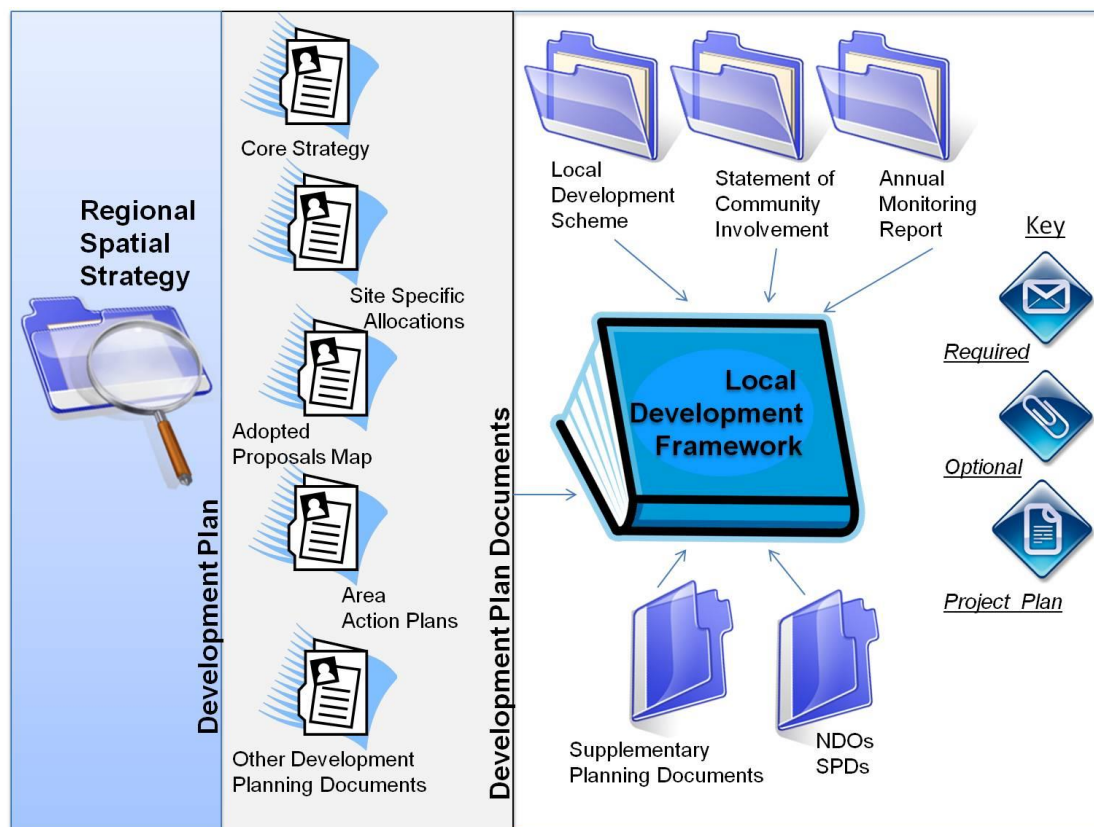


Figure 5.2: Local Development Framework

Source: Adopted from the NPPF, 2011

The UK local government is committed to ensuring that the planning system does everything it can to support sustainable economic growth. A positive planning system is essential because, without growth a sustainable future cannot be achieved. The planning system must operate to encourage growth and not act as an obstruction. The National Planning Policy Framework supports the implementation of neighbourhood planning being proposed in the Localism Bill, which will give local people greater ownership of the plans and policies that affect their local areas (Urban Forum, 2011).

5.2.3 Killian Pretty Review: (KPR Model)

The Killian Pretty Review (KPR) is an independent review of the planning application system in England, commissioned in March 2008 by Hazel Blears MP, Secretary of State for Communities and Local Government and John Hutton MP, former Secretary of State for Business, Enterprise and Regulatory Reform. The review was led by Joanna Killian (CEO of Essex County Council and Brentwood Borough Council) and David Pretty (CBE, Retired Former CEO of Barratt Developments Ltd.). The Killian Pretty Review was commissioned to investigate the opportunities for improving the planning application process for the benefit of all stakeholders that includes:

- Examine what can disrupt the progress of an application
- Make recommendations to improve the process, for example by:
 - Reducing requirements for the duplication of paperwork.
 - Reducing delays occurring after permission has been granted due to the discharge of conditions or the finalisation of legal agreements.
 - Enabling Councils to make better use of technology like the internet to notify people about planning applications, in addition to more traditional ways of telling the public such as in libraries and on notice boards.
- Review the application processes for better solutions

In March 2009 the UK government published its response to the Killian Pretty Report, proposing an ambitious, but deliverable, programme of measures to create a

planning application process which is more proportionate, that operates more efficiently and effectively and is more easily understood by all involved. The Royal Town Planning Institute's first progress report on taking forward the report's recommendations was published in July 2009. A second progress report was published in December 2009 and the package of measures proposed is described in the table below (Table 5.1).

Development management	Proactive Planning from Pre-Application to Delivery: Consultation
Improving the use and discharge of planning conditions	Consultation
Improving engagement by statutory and non-statutory consultees	Consultation
Publicity for planning applications	Summary of Responses to Consultation
Improving the process of discharging planning conditions	Final Report

Table: 5.1: Planning Process Reforms

Source: Adopted from the Killian Pretty Review Report (2009)

Alongside the above, a comprehensive update of the full programme of actions was taken by the government in response to the Killian Pretty Review. The work carried out by the Planning Portal is also a response to the KPR review's recommendations. In October 2009 the Planning Portal published a report by consultants Cragg Ross Dawson, commissioned by the Planning Portal and PAS (Planning Advisory Services), on the provision of an internet based information system to allow members of the public to establish whether or not planning permission is required. As part of the response to the Killian Pretty Review, a draft list of all nationally identified consultees (statutory and non-statutory) in the planning application process was also published during 2009 (Planning Portal, 2010).

5.2.4 Planning Portal: (PP Model)

The planning system involves making decisions about the future of cities, towns and countryside. This is vital to balance the desire of local communities to develop the areas where they would like to live and work with the assurance that the surrounding environment is not negatively affected for anyone. The planning system includes considering the sustainable needs of future communities (Planning Portal, 2011).

The planning applications are decided by the local planning authority in line with its development plan for the local area. Planning applications can be processed now through the internet online. Planning application online is an internet service that allows the parties and participants to process and view details of planning applications that have been or are being considered by the local authority. The online planning system makes it possible to monitor the progress of a submitted application from the Planning Portal, which has been delivered by the Department of Communities and Local Government since 2002.

The Planning Portal is the first point of call for anyone who wants to find out about the planning system in England and Wales. The primary objective of this portal is to provide a one stop shop supplying answers, services and information to anyone involved in the planning process from home owners and businesses to planning professionals and government officials. As the planning system in the UK evolves and modernises, the Planning Portal at the same time updates itself constantly to assist all users throughout the planning process (Kendall, 2011).

The planning portal is developed to simplify the planning system while reducing bureaucracy and streamlining the rules to make the whole planning process much more accessible and efficient for all stakeholders. An imperative element of planning portal is to ensure an instant and accurate application process for all users. The key benefits of adopting online planning portal are seen by local authorities especially with the efficiency and savings (Neill, 2012).

The Planning Portal, part of the Department for Communities and Local Government, processed its first application in April 2003 and since then has consistently hit tough targets to increase the proportion of planning applications made online. The planning portal is creating and maintaining the online planning application service. The multi-award winning planning portal offers planning and building regulations information, advice and services for the public, planning-related professionals and other government related agencies. Cutting down the number of paper applications has also made a major contribution to reducing the carbon footprint of the planning process by cutting out more than 8,000 tonnes of Co2 from the 32 million pieces of paper that have been saved (Planning Portal, 2013).

The Planning Portal has now set up new targets of making online planning process even easier and more user-friendly. It is believed from the portal executives that the portal could not have reached this point without the support of local planning authorities and the willingness of communities to embrace innovation and transformation in the planning system (Kendall, 2011). The growth in online planning applications processed through the planning portal in 2011 to 2013 within five participating councils is shown in the following table (Table 5.2).

Local Council: South East Midlands	2011	2012	2013
Bedford Borough Council (BBC)	70.75%	77.75%	85.75%
Central Bedfordshire Council (CBC)	53.75%	58.50%	67.75%
Luton Borough Council (LBC)	60.75%	72.75%	75.75%
Milton Keynes Council (MKC)	50.25%	63.75%	72.75%
Northampton Borough Council (NBC)	61.25%	63.25%	68.75%

Table 5.2: Online application submission in percentage

Source: Planning Portal Statistics (2014)

According to the Department of Communities and Local Government report, in the calendar year 2011 there were more than 270,000 planning applications submitted via the Planning Portal compared with just fewer than 230,000 in 2010, a rise of

around 20%. This is even more remarkable when considering that growth since 2009 has been more than 70%. Almost 70% of Local Planning Authorities (LPAs) received more than 40% of their applications online during second quarter of 2010, with 98 LPAs receiving more than 50% of their applications online. The Planning Portal is the government's official planning website, which gives a step by step guidance and video explanations for making different types of applications (Planning Portal, 2011).

Every local authority in England and Wales accepts planning applications via the Planning Portal. Chris Kendall (2010), the Planning Portal Director stated, *'I am sure we can all agree that it has been a tough year, with the planning sector being hit as hard, if not harder than most others'*; he further says, *'despite that background, the shift of services to online channels continues apace'* (Kendall, 2010).

5.2.5 Control Shift Framework: (CSF Model)

The UK Prime Minister, David Cameron (2010) has pointed out *'the first step towards giving local governments the ability to serve their local populations is to ensure that the system of funding encourages local councillors and officials to provide the housing that local people need and to promote the prosperity on which local people depend'*. He stated, *'as UK faces the prolonged financial pain caused by various government economic failure, it is essential that this vicious cycle of disincentives and fruitless micro-management comes to an end. A new financial framework needs to offer clear financial rewards for Councils that try to serve their local populations by encouraging house building and stimulating the growth of the local economy for sustainable development'* (Cameron, 2010).

A Conservative government will establish a new financial framework called Control Shift Framework (CSF Model) to:

- Take politicians out of the implementation of the local government funding settlement.
- Enable local authorities to benefit financially when they deliver the housing that local people need.

- Give local authorities the right to retain the financial benefits arising from new business activity in areas.
- Give local firms the power to back or block any local business rate increase.
- Give local authorities a new discretionary power to levy business rate discounts.

The UK central government wants to build a stronger but safer society where opportunity and power are spread much more widely as well as fairly. The Prime Minister David Cameron (2010), believes that communities are strongest when everyone has a free and fair say in the decisions that affect them. From local Council services and planning decisions, to local policing priorities, people should have as much power and choice as possible. *'The rise of top-down central and regional government control has undermined local councils previously and allowed people too little say over decisions that directly affect them locally. Without real local democracy, communities are made weaker: social responsibility, civic involvement and the inclusion of vulnerable people in social life are all being inhibited'* (Easton, 2010).

The Control Shift Framework (CSF Model) highlights the following five main strategic pillars to shift power away from the central government to local communities:

1. Giving local communities a share in local growth.
2. Freeing local government from central control.
3. Giving local people more power with the help of local government.
4. Giving local people more ability to determine spending priorities.
5. Eliminating regional government.

Matt Thompson (2011), Head of Policy in the Royal Town Planning Institute (RTPI) gave a talk on the RTPI's stance to the Localism Bill during 2011, at the East of England regional conference. He expanded on the positive approach that the RTPI has been taking in trying to influence government policy as illustrated with this campaign. The RTPI led 30 international and national organisations with the objective of ensuring that the need for strategic planning is recognised, even if it is under the guise of 'larger than local' planning system (RTPI, 2013).

The Localism Bill is the hub that has been set up to transform the way in which local authorities operate the planning permission process. According to the CSF Model, *'the days of tick box consultation processes look to be behind us and we are all going to have to flick our switches from send to receive and concentrate on listening to local communities rather than telling them what we want to build'* (MKC, 2010). The Control Shift Framework is basically a toolkit for those, who want to know more about how localism will impact on planning system for sustainable development as shown in the following graphical illustration (Figure 5.3).

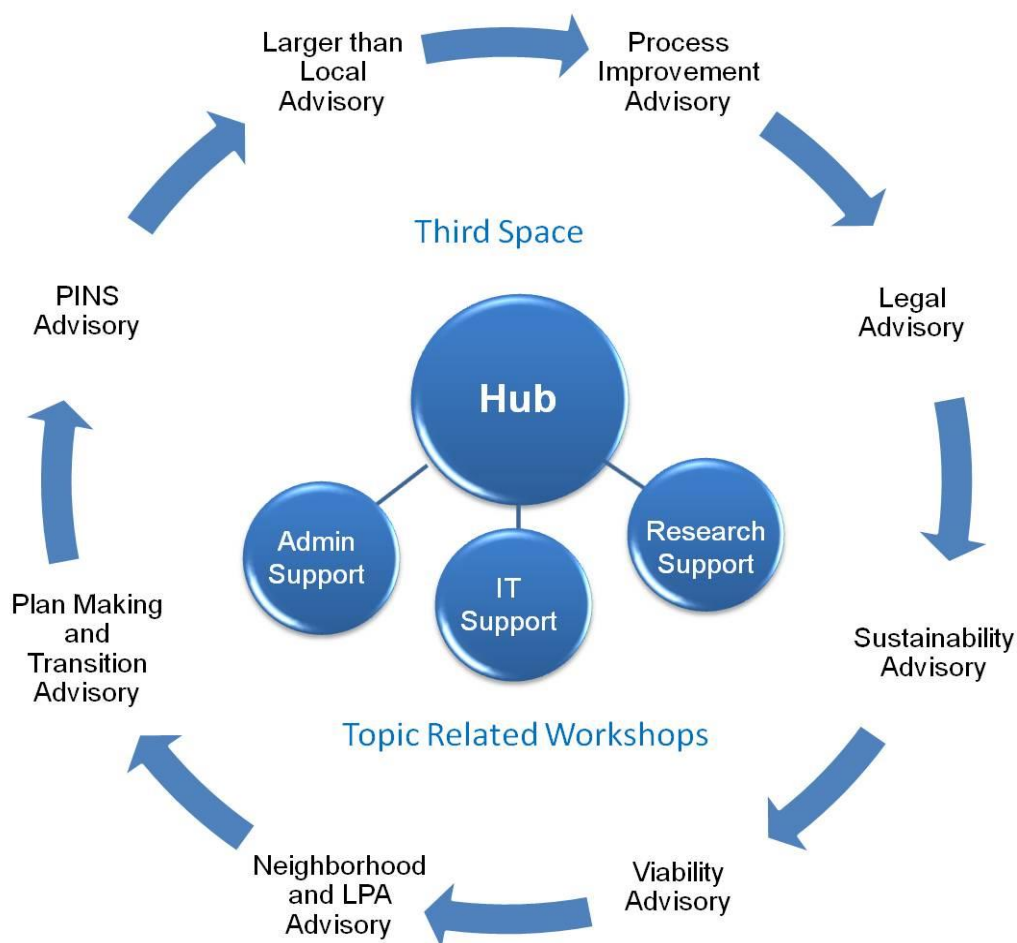


Figure 5.3: CSF Model: The Impact of Localism Bill on Planning System

Source: MKC, 2010

David Cameron clearly says that *'in the Control Shift Framework (CSF Model) localities across Britain have immense untapped human capitals. Conservative led*

Councils continue to be the basis of powerful ideas, yet they are frustrated in their attempts to make local life better by a target-driven, top-down government which is trapped in the bureaucratic age and micro-manages all they do. Our plans for decentralising responsibility and power set out in this framework, which will trust people to manage their affairs in a way that responds to local needs. Our vision of a more decentralised economy, society and politics is an essential part of our progressive vision for the good life and the good society' (Cameron, 2010).

5.2.6 Framework for Communities and Local Government (FCLG Model)

The Cisco Framework for Communities and Local Government (FCLG) includes the 'Connected Council Blueprint' and the 'Connected Community Blueprint'. The purpose of the 'Connected Council Blueprint' is to explore how technology can support a Council's own business and facilitate community service delivery. The technical blueprints include conceptual, logical and physical architectural templates that can expedite risk free technology installations. The 'Connected Community Blueprint' details how the connected approach can benefit all aspects of community life; including housing, business, transport, city centres, policing, healthcare and education. It provides real examples of where technology can be used to benefit the community. The overall FCLG Model explains how technology can support a Council's wider business and service changes.

Cisco's local government customers include all types of authority across the UK and Ireland, from district to borough, to county and unitary authorities. Cisco is helping the local authorities to transform the delivery of services to citizens, improve the operational efficiency of the authority and to introduce smarter and greener ways of working. As technology becomes increasingly pervasive for everyone these days in both personal and professional life, Cisco is working with local government to drive sustainable communities through the use of ICT. Fundamental to this has been the importance of an architectural approach and Cisco has introduced a 'Framework for Communities and Local Government' which provides guidance and a blueprint for both a 'Connected Council' and a 'Connected Community' (Cisco, 2011).

The UK Government has defined a policy to transform Public Services (Cisco, 2011). Government has placed ICT at the heart of this policy, in order to increase efficiency and improve the range and quality of public services. One of the key elements of the government's programme is the delivery of joined-up services at a community level. Cisco has worked closely with many local authorities to promote community transformation through information sharing, communications and ICT technologies. A connected approach is helpful to develop the vision, strategy and plans for all aspects of community life as shown in the Cisco IPICS illustration (Figure 5.4).

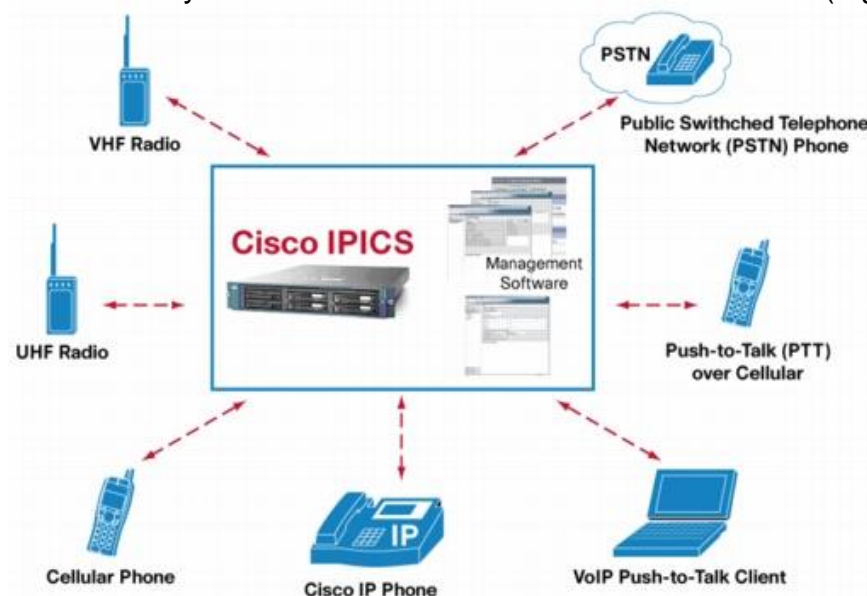


Figure 5.4: Cisco Framework for Communities and Local Government

Source: Cisco, 2011

According to Morgan Wright (2008), *'government's legislators and local policymakers can enhance public safety by advocating an interoperability approach that includes any type of communications device, not just radios, from any vendor'*. In the Cisco local government framework (FCLG Model), the 'Connected Council Blueprint' explains how technology can be used to drive cost savings, efficiency and improved services for a Council through the use of Information and Communications Technology (ICT). This Blueprint is aimed at senior business and technical management stakeholders within Councils; typically those who are responsible for financial and operational health of their businesses, and for directorates i.e. CRM, HRM, ICT etc.

There are three key areas of a Connected Council's business operations that can benefit from transformation through technology such as Work-style, Work-force and Citizen-Services. The Cisco (FCLG Model) framework recommends that Councils invest in an 'ICT Service Delivery Platform' that utilises the latest developments in data centres, networks, information and service security. Such investments will enable Councils to rely on ICT infrastructure with the best reliability, availability, serviceability and security characteristics Cisco Connected Council Blueprint model (Figure 5.5).

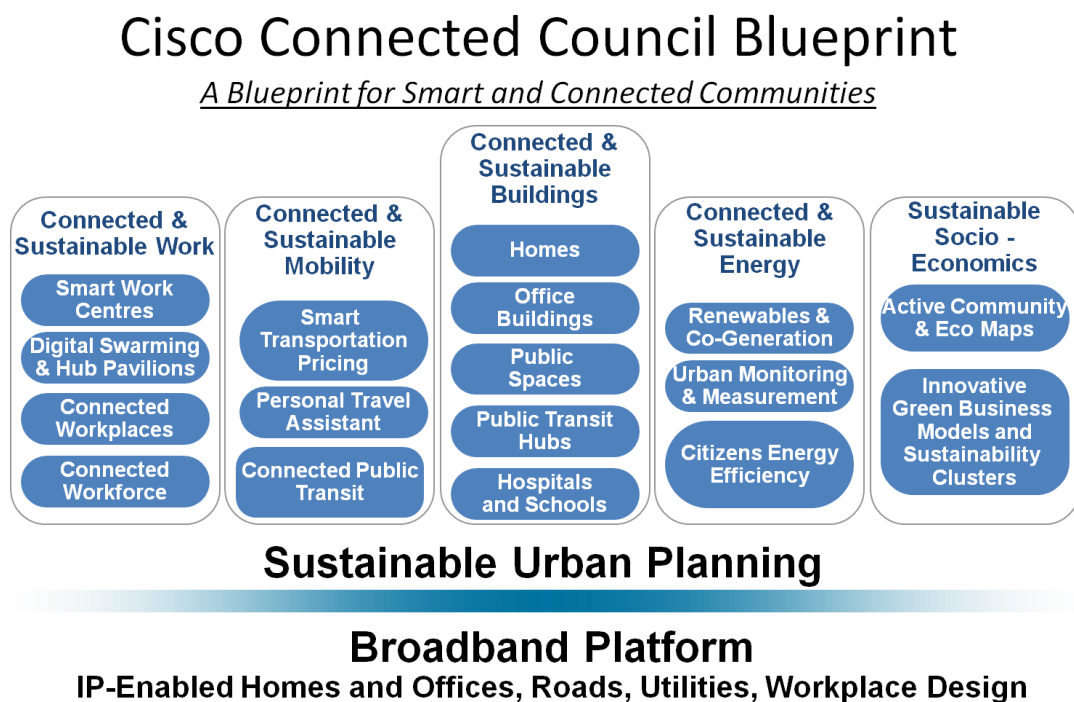


Figure 5.5: Cisco Connected Council Blueprint Model

Source: Cisco, 2011

5.2.7 Nonaka and Takeuchi Knowledge Framework: (SECI Model)

From a theoretical and conceptual perspective, the key challenges to address in this research study is to demonstrate the value creation potential from a successful knowledge management in enhancing the capabilities of integration into innovative planning process. It is also important for the researcher to explore the supportive and preventive elements of knowledge management and their impact on human and

technological resources in the local government. In the current project the researcher tried to analyse the communication channels shift in both internal and external environments to assess the planning process for smartness and sustainable development by exploring the Nonaka and Takeuchi framework (SECI Model).

The task of the SECI Model is to identify and help the utilisation of important tacit knowledge that is potentially useful when it becomes explicit. Nonaka and Takeuchi (1995) described how the interaction between tacit and explicit knowledge can go in four different directions as described in the table below (Table 5.3).

SECI	Explanation by Nonaka and Takeuchi
Socialisation	The exchange of experiences where personal knowledge is being created in the form of mental models. Examples of situations where this happens are master fellow relationships, on the job training, trial and error policy, imitating others, constructive brainstorm sessions, practising and training, the exchanging of ideas and a lot of conversation.
Externalisation	Personal or tacit knowledge is made explicit in the form of metaphors, analogies, hypotheses and models, e.g. in language. One usually finds externalisation in the design process when conversations and collective consideration are used to boost the process. Nonaka and Takeuchi find externalisation the key process in knowledge conversion because it is here that, from tacit knowledge, new and explicit designs.
Combination	Notions are synthesised into a knowledge system. People exchange knowledge, and this knowledge is combined through documents, meetings, telephone conversations and the exchange of information via media like computer networks. New knowledge can also be created through the restructuring of existing information by sorting, adding, combining and categorising explicit knowledge. Combination is the kind of knowledge creation that we usually encounter in education and training. Examples of combination are knowledge and information systems.
Internalisation	A process in which explicit knowledge becomes part of tacit knowledge. This can happen through learning by doing and documented knowledge can play a helpful role in this process. Internalisation can be seen when new planning offers “relive” a project by studying the archives. Internalisation can also be seen when experienced managers or technicians give lectures, or when authors decide to write the biography of an entrepreneur.

Table: 5.3 (Nonaka and Takeuchi SECI Model)

Source: Nonaka and Takeuchi, 1995

Although the margin line between explicit and tacit knowledge is not very clear, tacit knowledge is created by explicit knowledge and vice versa. Explicit knowledge is easily expressible but tacit knowledge cannot be easily articulated. Information and knowledge have profoundly transformed businesses, organizations and societies because knowledge management promises concepts and instruments that help organizations to provide an environment supportive of knowledge creation, sharing and application (Maier, 2007).

Planning officers are now expected to be able to share their expertise across the wide range of stakeholders. Their expertise is usually embedded in tacit form between the staff of the specific planning teams. Planners can no longer usually articulate problem solving activities simply by applying a crude rule or general protocol. To improve and enhance the planning permission process, planners need to be able to articulate new knowledge with the help of available systems, technologies and departmental experiences. Planners are also expected to be able to understand the complete planning process from all stakeholder contexts. Cooper (1998) says, '*the sustained innovation relies heavily on articulated knowledge*'. The strategic aim to improve planning service delivery for sustainable development can be illustrated adapting the spiral of the SECI Model as shown below (Figure 5.6).

The four kinds of interaction between tacit and explicit knowledge form a 'coil', which goes from socialisation through externalisation and combination to internalisation, then followed by further socialisation, externalisation and so on. In relation to the planning process, active knowledge transfer includes both ambiguous, tacit knowledge and articulated knowledge (Spender, 1996). Managers' tacit knowledge and their abilities to navigate ambiguous and complex situations are most critical for organisational success (Baumard, 1999). The SECI Model demonstrates the importance of knowledge sharing as a medium to combine new technologies (mainly embedded in the tacit planning process domain) with existing technologies (mainly embedded in the explicit process domain) to generate and share knowledge both internally and externally.

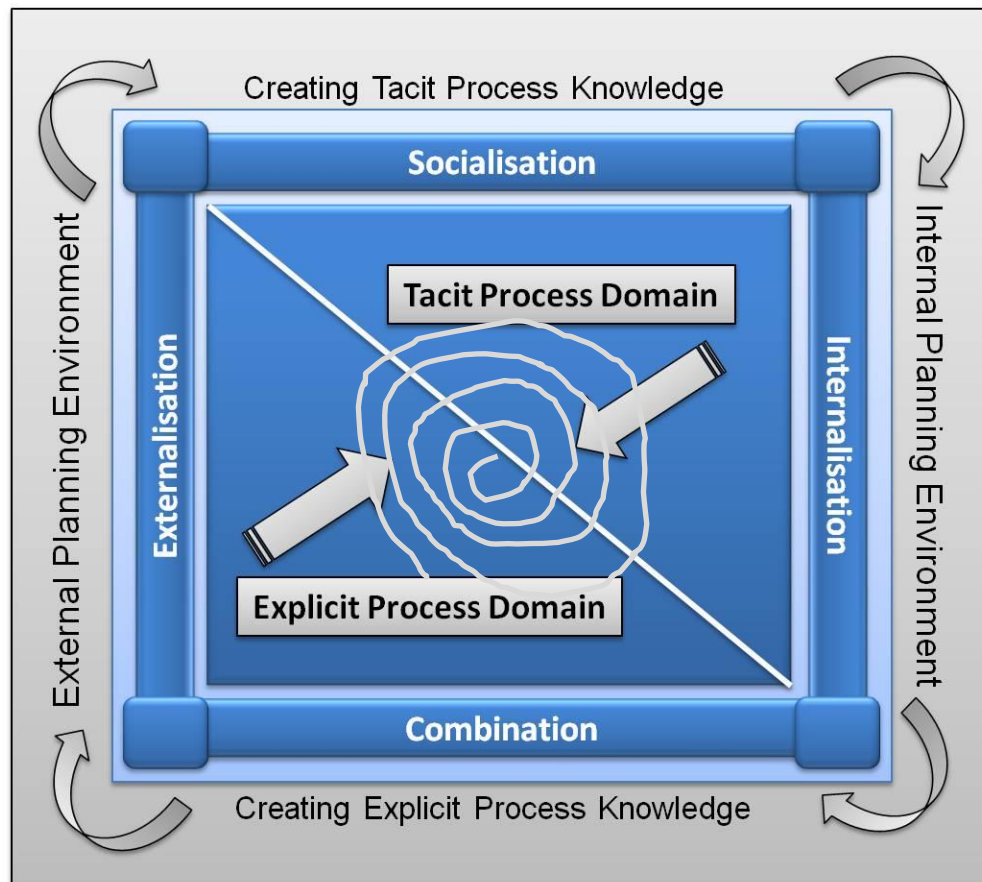


Figure 5.6: Spiral of Tacit / Explicit knowledge in the Nonaka and Takeuchi SECI-Model:

SECI-Model is adapted to the planning system case

Source: SECI-Model by Nonaka and Takeuchi, 1995

Managers must be actively engaged in the emergent process of knowledge management implementation in a way that does not simply offer exhortations or depend only on the functionality of the ICT infrastructure (Benbya, 2008). In this tacit domain, planners strongly favour team efforts and face to face meetings to draw down knowledge patterns. It is important to study the SECI Model to examine what planners mean by the terms face to face working processes. Working in teams is the activity, which is effectively supported by the emergent technologies because once planners work within strong coordinated teams for a period of time, they can manage to share relevant expertise and solution from new technologies and service development. Use of such tactics enables them to articulate tacit knowledge and make it visible to team members, so that it can then be shared among planning teams (Joint Services, 2011).

5.3 Defining a Knowledge based Practice/ Pragmatic Framework (CMT Model)

Exploring in some detail a number of major policy documents and a widely accepted model of KM processes has led this study to synthesize a number of perspectives and offer a new model. This pragmatic framework was verified from experts' feedback report that was later upgraded in continuing main study. Innovative communication channels, effective co-ordination strategy and knowledge management were 'structural inputs' that emerged as fundamental factors in the planning system reformation. The transitions and transformations in the system has produced 'reformed outputs' in new socio-technical systems, which was assumed as a smart and sustainable and that would delivered integrated knowledge based planning system (Appendix A-1: Section A-1.3 and A-1.4).

To bring about research key outputs, this study required to investigate on the one side a reform of human interaction through improved coordination, improved motivation and training (organizational learning). On the other side technological resources to provide effectiveness (capability) demonstrated in the responsiveness of the system, a culture of innovation and great sophistication (precision, attractiveness and quality of experience). From the field studies, the researcher intended to achieve evidence of planning system transformations, at least in relative terms, through gains in smartness and sustainability.

Since the mid-1990s, the UK local government widely encouraged the use of ICT and emerging technologies, which are often considered as a fundamental essence of transformation in the better delivery of public services. ICTs are used to respond to citizens' needs quickly and to decentralise public administration and to enhance the local governments' ability to oversee key projects (Prybutok et al, 2008). The feature of this research study was the presentation of a pragmatic framework as the empirical model. The initial empirical model was named after three fundamental identified research factors i.e. coordination, motivation and training (CMT-Model), which was developed to provide a solid foundation towards the key research propositions as graphically illustrated below (Figure 5.7).

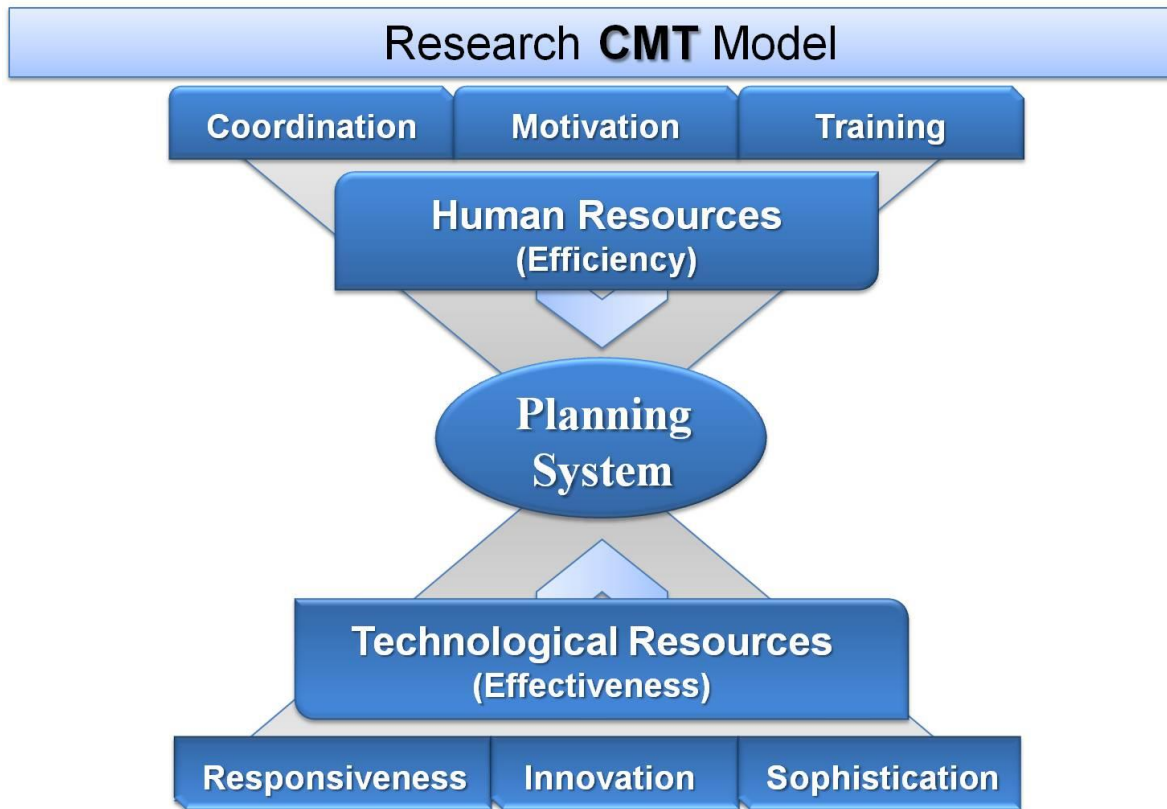


Figure: 5.7 (CMT Model-I: Research Conceptual Framework for Efficiency and Effectiveness)

Source: Nasrullah Khilji (Derived from Section 5.2 above and Appendix A-1: Section A-1.3 and A-1.4)

The pragmatic framework (CMT-Model) emerged as a reflection on the organisational conceptual and policy models previously reviewed and which were themselves embedded in the historical evolution of the UK planning system. The pragmatic framework was helpful to understand whether a socio-technical system is the most appropriate solution for the on-going transformation in the planning system. The CMT-Model above illustrates a cross road combination between technological and human resources and the impact of knowledge management on these resources to achieve greater efficiency and effectiveness in the planning system. The CMT-Model is emerged from the review of conceptual and theoretical models. The CMT Model reflects an innovative and integrated knowledge based planning system based on coordination, motivation and training as key research propositions that provided a guideline to move forward toward smartness and sustainability 'hybrid socio-technical system' (Ch-2, section 5.2, see Appendix A-1 and B-1).

In the empirical part of the research project, the participating local authorities' ICT vision is of a council where ICT is used to help drive service efficiency and effectiveness, to support delivery of high quality council services that are secure, always available and which reach out to embrace partners and the whole community. Most particularly action is being taken on the way ICT systems availability is improved for the provision of better support to increase remote service access availability. Remote Access Services have become required on a virtually 24x7x365 basis for some council members in this study during 2008 and 2010, while service levels have run at well over 99% (Jewell, 2010).

The local government ICT teams use the SOCITM benchmarking services to compare themselves with other team performance nationally. Thus the on-going reform of the planning system was characterised by emphasising the following key points:

- **Customer oriented approach:** *this pays attention to the concerns of citizens and provides services when and where these are required with greater flexibility, effectiveness and control.*
- **Local community ownership:** *this empowers local communities to take ownership of community problems and urges planning officials to let people participate in local development by delivering public services efficiently and effectively.*
- **Customised services:** *local service customisation and personalisation based approach on stakeholders' demands, preferences and needs.*
- **Online data availability and accessibility:** *internet has provided a useful way of communication and interaction between internal and external environments. Planning applicants and planning officials are now exchanging information through electronic means rather than only face-to-face interaction.*
- **Smart networks:** *multidirectional network has created a direct communication with internal employees, interdepartmental teamwork and information sharing with external environment.*
- **Channel shift:** *this is providing innovative communication, effective coordination and knowledge management for coordination, motivation and training among stakeholders for sustainable development in social, economic and environmental skeleton.*

5.4 Planning System Reform (As-Was to As-Is)

The local government planning system has moved in the way of transformation from a bureaucratic environment to one in which all stakeholders embrace the promise and need for an electronically efficient planning paradigm. It is also recognized that the planning system reform is a living construct, which requires continuous up-gradation. Since the ICT strategy is implemented the local authorities constantly reviving their IT structure with on-going reforms. The local government has radically reorganized top management tier and reshaped service structures while handling a very turbulent wider economic climate that has major repercussions for the public services. The local government 'VFM policy programme' documents this impact and it is imperative that the refreshed ICT strategy is now realigned with this 'financial reality' (Jewell, 2010).

Looking further ahead it is recognised that the central government ICT strategy also outlined a radical vision of a changed IT environment for the whole public sector and this strategy must take account of the leadership vision as well as local priorities in future. However, most local government planning system frameworks in literature are based on the geographical and demographical requirements of local authorities in the best interest of their local communities. The UK local authorities have had no choice but to follow e-government development strategies as proposed and carried out by central government. The whole socio-political system is shifting the balance of power between government levels (supranational, national, regional and local) and functions (Cattaneo, 2006).

To explore the current planning system with critical analysis, the researcher decided to investigate the earlier planning system by evaluating the transformation from previous 'As-Was' state to current 'As-Is' state of planning system (see for detail Appendix A: Section A-1 and Appendix B-1), which is also graphically exposed in the paradigm illustrations below (Figure 5.8 and Figure 5.9).

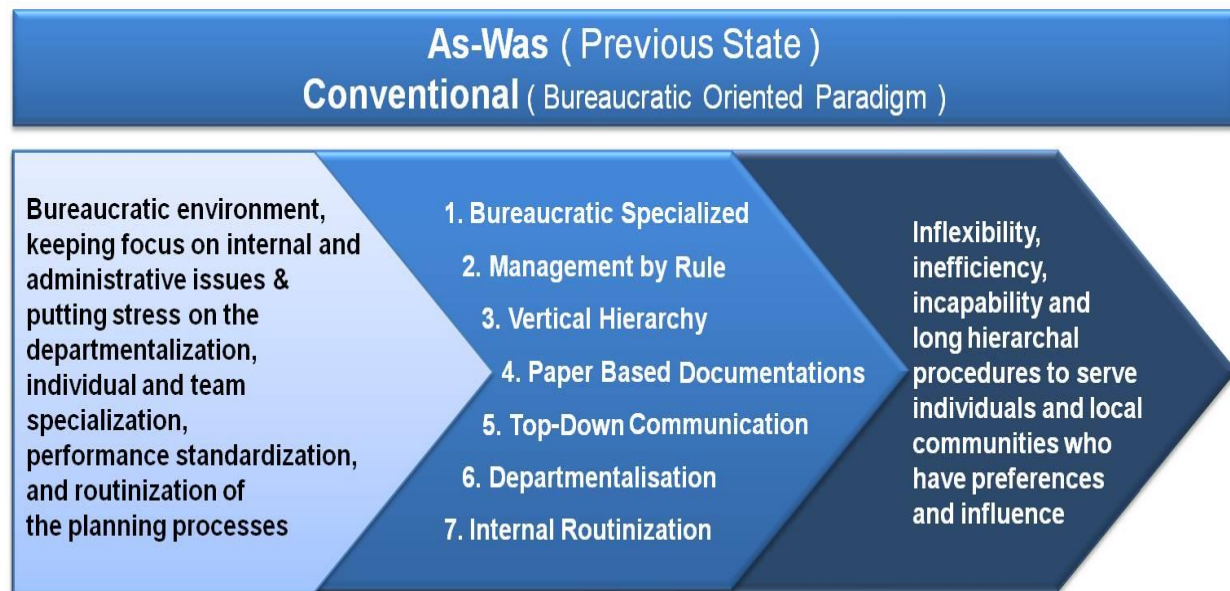


Figure: 5.8 (Evaluating the Previous State of Planning System 'As-Was')

Source: Nasrullah Khilji (Appendices A-1 and B-1)

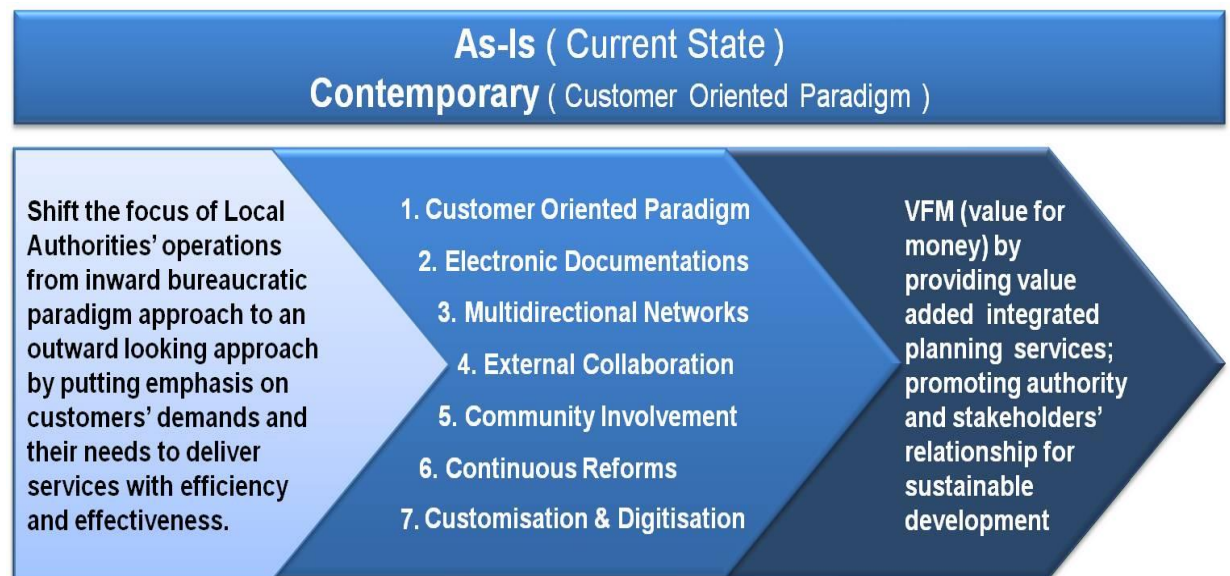


Figure: 5.9 (Evaluating the Current State of Planning System 'As-Is')

Source: Nasrullah Khilji (Appendices A-1, B-1 and E-2 'Section: E-2.1')

By examining the need for an integrated knowledge based planning system within the local government planning system the researcher defined the context for sustainable development by analysing the relevant theoretical frameworks. The planning system shows substantial differences in many key aspects of knowledge based e-planning given the related socio-political situations. This study has helped to identify supportive

and preventive knowledge factors for both implicit and explicit knowledge domains. The researcher explored that the current planning process was an interaction of many functional areas, from initial inquiry through to final development approval.

The current state 'As-Is' framework (Figure 5.9) was adapted from the efforts being undertaken among participating local authorities that were at an early stage of their transition to unitary status. The current state framework summarises the main factors that either support or prevent an integrated knowledge based planning system in the local government. The planning system transformation from its conventional 'As-Was' state to the contemporary 'As-Is' state is graphically illustrated below in consideration to move forward towards smart and sustainable development (Figure 5.10).

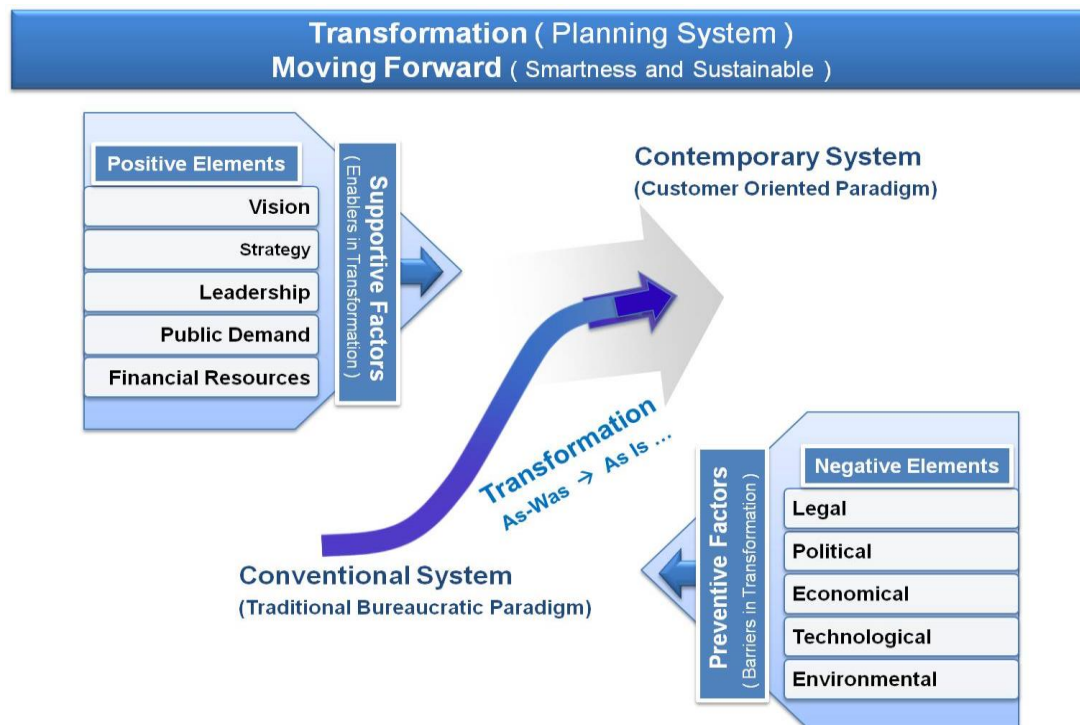


Figure: 5.10 (Key Knowledge Factors in the Transformation from **As-Was** → **As-Is** State)

Source: Nasrullah Khilji (Appendices A-1, B-1 and E-2 'Section: E-2.1')

This exploratory process modelling study took a multidisciplinary approach in order to investigate key characteristics of the planning system. In the current circumstances, future development management techniques must combine functional expertise with high technological integration capabilities for diverse planning disciplines. This

combination of expertise can be created through knowledge management applications. This research study describes that KM in planning system influenced by several factors, which were identified and categorized as supportive (positive elements) and preventive (negative elements) that directly or indirectly could affect identifying, articulating, sharing, recreating and managing knowledge key factors as shown below (Figure 5.11).

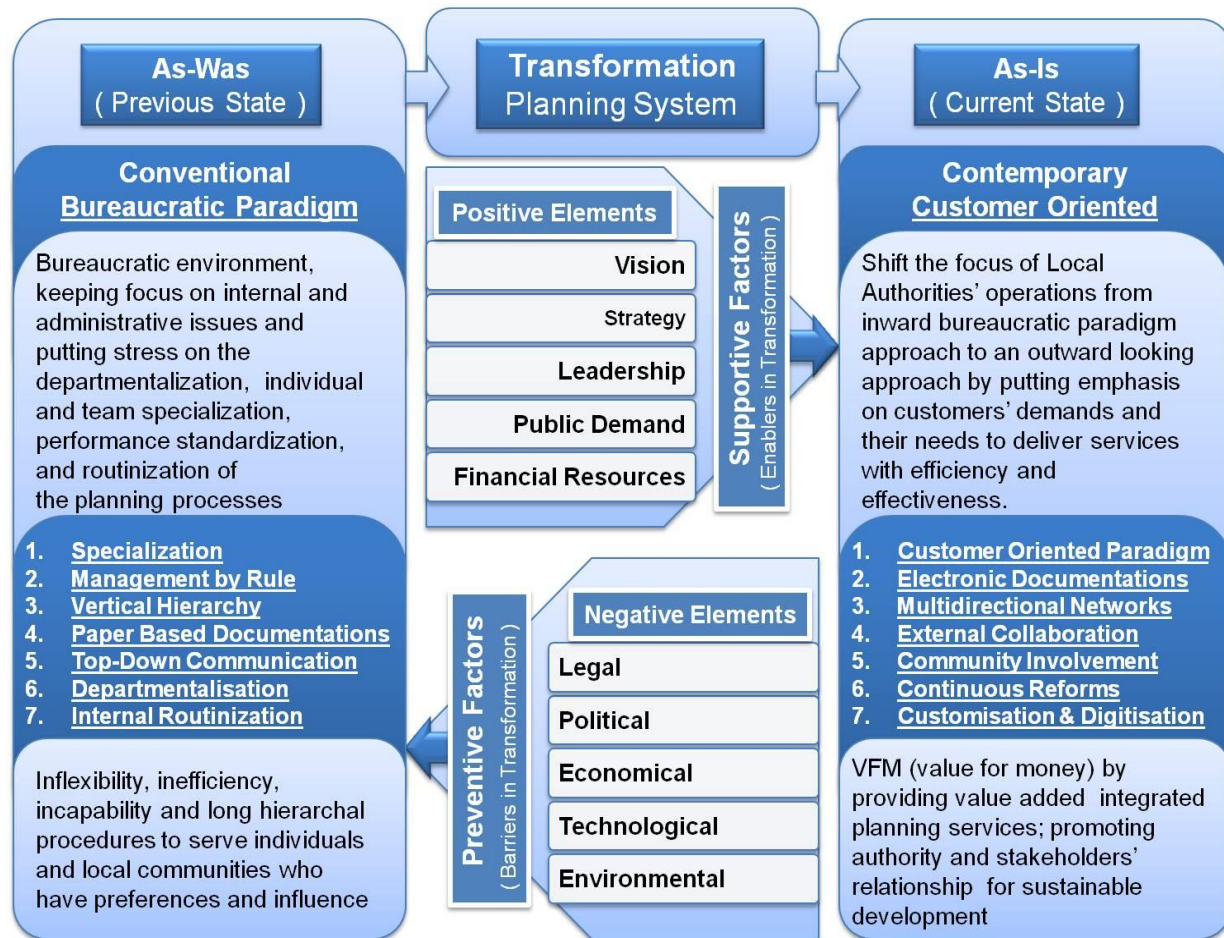


Figure: 5.11 (Research Proposed Framework for System Transformation from **As-Was** → **As-Is** State)

Source: Nasrullah Khilji (Emerged from Figures: '5.8, 5.9 and 5.10')

The current state of the planning system is internet based and customer oriented. Many experts, referred to and emphasised this transition as a continuous reform from a conventional 'where the planning system was then' to contemporary 'where the planning system is now'. The planning system at its current state was actually at the state of constant reform that further required continuous changes to achieve its future 'To-Be' state for smartness and sustainability. A number of preventive elements were identified

that hinder an integrated knowledge based planning system progression. However, a number of supportive elements at the same time were listed to achieve the future desired state as deliberated in the chapter six (Ch-6) in detail. The literature review and analysis of the theoretical frameworks were found helpful to propose the current planning system pragmatic framework as shown above (Figure 5.11).

5.5 Supportive and Preventive Environments of Knowledge Developments

The planning process is constantly moving forward into an internet based online system e.g. planning web portal, where applicants have web based technological access to submit and track their planning applications. The backbone for the online process is certainly the local councils' internal ICT strategy, which may contain various technological tools and applications such as document management system (DMS), enterprise resource planning (ERP), geographical information system (GIS), customer relationship management (CRM), multidirectional networks and innovative communication channels (mobile apps and social media) as well as cloud computing 'system as a software' (SaaS). These tools and applications are supplied by various market leaders with a confidence to reduce the burden of time and cost for sustainable development in local government.

The UK local government has successfully implemented ICT strategy but in order to fully leverage crucial benefits, it was vital for this study to identify key supportive and preventive factors. From the literature review and theoretical framework study, many elements were identified as driving forces for an efficient and effective planning system. The key supportive factors identified during the literature review and the analyses of conceptual models were among: *vision, strategy, leadership, public demand and financial resources*. The researcher also identified major preventive factors as main barriers in the development and implementation of knowledge based planning system such as: *political, social, economic, technological, environmental and legal challenges* as shown in the following comparison diagram (Figure 5.12).

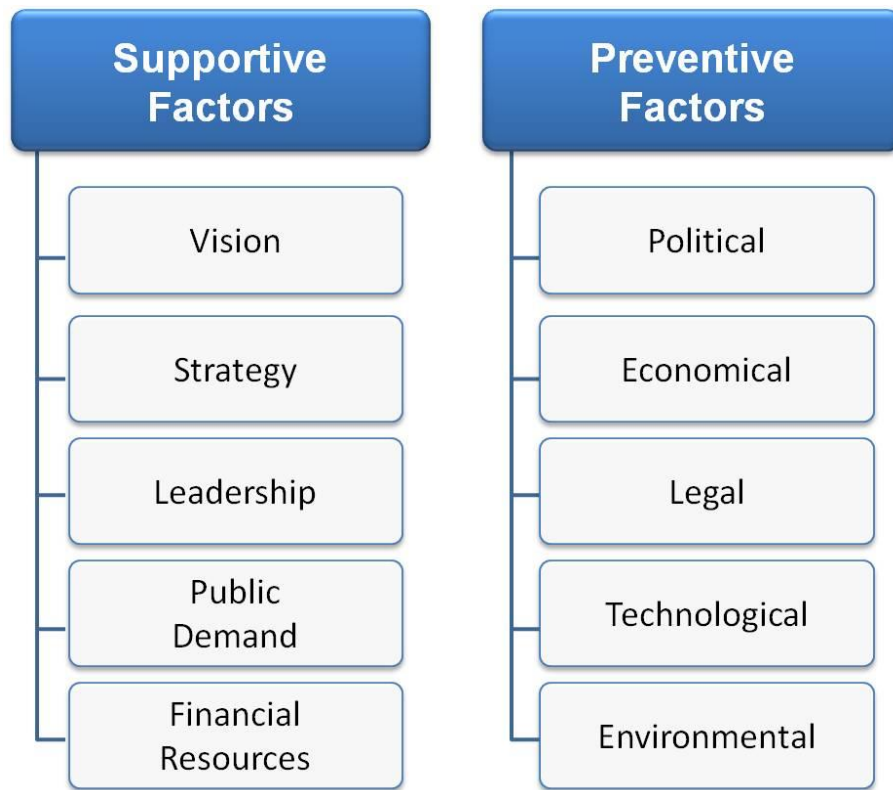


Figure: 5.12 (Identified Key Supportive and Preventive Knowledge Factors)

Source: Nasrullah Khilji (Appendix A-1 to D-1)

Findings from the research study of five UK planning authorities illustrated that planners are familiar with current software applications; however, they still face difficulties for knowledge management, particularly once they focus on the management of tacit knowledge. The researcher focus is therefore to identify the preventive and supportive knowledge factors for both explicit and tacit knowledge domains to appropriately identify, manage, share and transfer expertise. It is also understandable that a successful planning system is capable to manage intangible ideas along with tangible one. This required a specific but appropriate procedure to influence both the supportive and preventive factors of knowledge management.

5.6 Chapter Summary

In this chapter, various efforts that have conceptualised this study challenges are reviewed. The theoretical models were analysed to identify the major knowledge factors that affect the process of planning system transformation from conventional to contemporary approach. However, many of the conceptual frameworks were based on the technological advancements toward digitisation and online services. In this chapter, a preliminary conceptual framework (CMT Model-I) is proposed, which aims to evaluate the role of human and technological resources interaction. The key attributes of the conceptual framework make it possible to analyse the transformation strategy of planning system from traditional and bureaucratic to friendly and open knowledge sharing one. From the identification, integration and creation of key knowledge factors an understanding is realised that can make a huge contribution in the development of an integrated knowledge based planning system in next chapter (Ch-6).

CHAPTER 6**PLANNING AUTHORITY
PROFILES**

In the previous chapter (Ch-5), a process modelling study was discussed to scope out an initial pilot study (the foundation study). This chapter (Ch-6), presents the results of the main field studies which review the technological and human resources available for an efficient and effective knowledge based planning system. This study was commenced with a recruitment and description of five participating local planning authorities in the South East Midlands to explore the emerging technologies and their consolidated ICT strategies. The conventional and contemporary states of the planning system were examined in anticipation of the transition towards the future 'To-Be' state. This study was conducted by exploring the innovative communication channels, effective coordination strategies and an integrated knowledge management among the five participating local authorities in the context of planning system transformation.

6.1 Studying the System

The fieldwork reported in this chapter presents the research study contribution in the form of a critical synthesis based on the collected evidences and process modelling. The fieldwork described here evaluates a pragmatic development framework to support the emergence of a specification for the proposed transformation of the planning system. This research study demonstrates how an integrated knowledge based planning system would enhance efficiency and effectiveness. The main study gathers the evidence to support knowledge management for an open, continuous learning and knowledge sharing environment for improved and quality public services.

The major challenge identified in the UK local authorities was to certify and ensure coordination, motivation and training among staff applying best practices based on knowledge management. The key objectives of this study were to examine how to improve efficiency and effectiveness within the planning system. In response to a number of drivers for upgrading, the Improvement and Development Agency (IDeA) for local government in England already harnessed their web 2.0 tools to support knowledge creation and sharing. This initiative in local government provided a social network for local councils online communities of practice i.e. 'www.communities.idea.gov.uk'.

The researcher was initially interested to explore how to implement an intensive programme of fieldwork at Bedford Borough Council, where the initial response was positive and very helpful. A good range of contacts were made and some useful data was gathered. However, like many local authorities beset by economic and organizational pressures, Bedford Borough Council no longer could offer the commitment which they hoped to deliver. Accordingly, the researcher decided to review how the fieldwork could be continued by using a wider range of planning departments on a more selective basis.

The refocusing of fieldwork was carried out to prepare a modified work plan, which was designed to see the planning reform work done at Bedford Borough Council along with four more local authorities including Central Bedfordshire, Luton, Milton Keynes and Northampton Borough Council. These councils were helpful to contribute data to propose and verify the models that provided a base to this study. However, the Bedford Borough Council proved to be a useful trial of ideas for process modelling as pilot study.

The researcher built up a good network of contacts in the region through his base in the Cranfield University Innovation Centre and being active in personal development relevant to research fieldwork in the South East Midlands. The fieldwork strategy (incorporating case study of five authorities and adopting a broader rather than deeper approach to field data collection) has helped to gather data to fulfil the original research intentions and contribution. The researcher collected and analysed a range of primary and secondary data to permit modelling, data synthesis and prototype development.

The fieldwork undertaken was applied to evaluate and validate the key research propositions and the main research hypothesis. The emerging technologies, whilst technically strong in some areas were not yet converging as effective ways of managing knowledge. It was intended to assess the socio-technical system as a base of knowledge management for developing an innovative planning system with improved efficiency and effectiveness towards smart and sustainable development.

The exploration of the local government planning system was undertaken with a view to implementing web based services. The continuing rate of political, economic and social change experienced in the UK local government instituted pressure for an open knowledge sharing environment advocated towards the hybrid socio-technical system. The current 'As-Is' state of the planning system was investigated to assess its transformation towards future 'To-Be' state.

6.2 Case Study Fieldwork

The empirical data was gathered during the fieldwork from a number of sources including interviews and questionnaires carried out to identify ways in which the knowledge based planning system initiatives were having impacts to achieve sustainable development. The public documents and the local government online reports were scanned while using persistent observation during the main study fieldwork. The secondary data and field observations were conducted to inspect how the local authorities share, transfer, manage, integrate and create knowledge for their efficient actions and effective decisions.

The need for an integrated knowledge based planning system was examined within the participating local authorities to justify its role in improving efficiency and effectiveness. It was believed that the fieldwork evidence would contribute to strengthen the local authorities' ICT strategy to move towards smart and sustainable development. The field work within the local authorities revealed their strategy to reform the planning system towards smart and sustainable development. The local authorities were required to bring a wide range of improvement to citizen's services as they wanted to regularly innovate themselves to meet the challenging needs of their local communities.

The participating local authorities were contacted to examine their planning system as an interaction of many functional areas, from initial inquiry through to final development plan approval that required them co-operation and collaboration. Emerging ICTs such as Document Management System (DMS), Customer Relationship Management (CRM), Geographical Information System (GIS), Communication and Project Management tools are already in use by the local authorities to deliver better public services. The continuous reform in the planning system was assumed to further enhance performance towards smart and sustainable development. From fieldwork, it was observed that the planning system was always under continuous pressure to reform for better public service delivery.

This study was conducted to examine the characteristics of an integrated knowledge based planning system and to reveal how planning teams would share and promote team expertise instead of relying only on individual expertise to fill the research identified gap. The audit of knowledge management key elements was perceived as a significant technique to examine performance efficiency and effectiveness in the planning system. The researcher realised that the efficiency and effectiveness in the planning system was depended on both human and technological resources in order to identify, integrate and create new knowledge. The process of new knowledge creation was examined based on the essential presumption that how human expertise were shaped and interchanged by means of a social interaction.

The fieldwork was conducted within the participating local authorities to examine how planners share, manage and transfer their knowledge, which is typically embedded in tacit form within the planning system. Planners often could not articulate problem solving activities or emerging technologies, which involved ambiguities and unforeseen interactions among different ICT tools and choices of technological paths.

6.3 Participants in the Case Studies

The planning system in five participating local authorities was determined for the research strategy formulation stage. The main study was considered suitable and appropriate for theoretical research sampling strategy as discussed in the earlier methodological consideration in chapter three (Ch-3) and explained in an exploratory process modelling in chapter five (Ch-5). The researcher initially experienced some difficulties in approaching the local authorities that took him longer than expected to build relationship with main participants for fieldwork and data collection. Due to the researcher's lack of personal contacts, building relationship in local authorities had to be done in many ways such as by sending cold emails, doing cold calls, searching for influential contacts, using the colleagues and friends references and going to participate in the local events, workshops and seminars to establish contacts in these events organised by local bodies including EEDA, SEEDA, SEMLAP, MKCC, LGA and MKIG etc. in South East Midlands.

The participating local authorities that initially contacted were selected on the basis of their website presence that indicated they were actively practicing ICT strategies towards sustainable development in the South East Midlands. Some of the relevant information was received from news and magazines published by coalition government and non-government agencies during the preliminary fieldwork. The researcher found it most appropriate as a resided of Milton Keynes and based at Cranfield University for professional activities to contact the authorities such as Bedford Borough Council initially, which was later considered as a pilot case.

This single council case was later expended during the process modelling study into five local planning authorities in the South East Midlands. The research field sampling was

discussed earlier in fifth chapter (see section 5.2). The participating local authorities were contacted through personal and social contacts, which were established in the early stage of fieldwork. The local planning authorities and their representatives that were sponsoring, organising and leading the local and regional development events were contacted during local events. A series of joint seminars and workshops organised by EEDA, SEEDA, SEM LAP and local councils at Cranfield University, University of Bedfordshire, Open University, MK-Dons and at other prominent local venues were held in and around Milton Keynes.

The researcher attended some five regional conferences, seven local seminars and some three workshops to further strengthening the relationship and to develop trust among the five councils. Out of 48 introductory and follow up contacts in five authorities only 28 gave positive responses that were successfully recruited for field survey and data collection. The senior staff members' appointments were usually confirmed through the researcher's direct contacts via official reference, seminars and workshops networks. The researcher initially estimated around 50 participations but later approached only 48, while the actual responses were 28; the success rate for total responses was calculated to 58.33%.

The process of recruiting the research participants began with the direct researcher contact and sending expression of interest emails. The initial contact was always followed by smart tactics such as follow up emails, phone calls, requesting for an appointment and going to seminars to meet up again. Around 48 staff members, performing their job in local authorities' planning systems were approached to build contacts and make a firm ground for data collection and analysis (see for more detail the Appendix D-1). The 28 volunteers' from five councils who confirmed their interest to participate in this study are shown below (Figure 6.1).

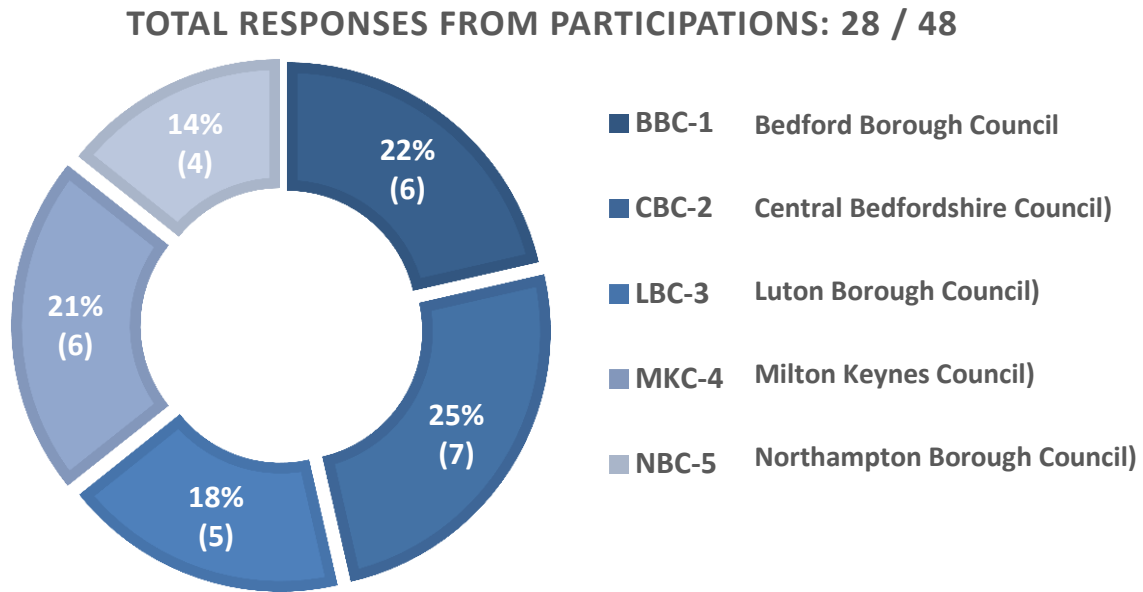


Figure: 6.1 (Overall Participation from Each Participating Council in %age)

Source: Nasrullah Khilji (Appendix D-1, Section: D-1.5)

The participating local authorities were given identification codes by their specific name and particular order. Each interview was assigned a unique identification sub-code that was managed within the specified cluster of coding depending on the conducted interview sequence in a specific council. For-example BBC-1.1: Bedford Borough Council, the first interview in the first participating local planning authority as illustrated in the linear chart (Figure 6.2). The total interviews conducted during the research field work were 18; each interview was almost 60-90 minutes of duration. Interviews were usually recorded and kept safe in research audio folder for data retrieval; narrative and analysis need in later and advanced research stage.

From the start of fieldwork and by the end of data collection as well as during data analysis and valuation phases, the researcher was in constant contact with major participants throughout the research field study. The researcher maintained regular contact with some eight planning officers from five participating local authorities during the research case study. For case study data analysis 18 interviews were conducted. Number of Interviews, interviewees and local authorities' participation in term of allocated interview codes and dates are listed in timeframe shown below (Figure 6.2).

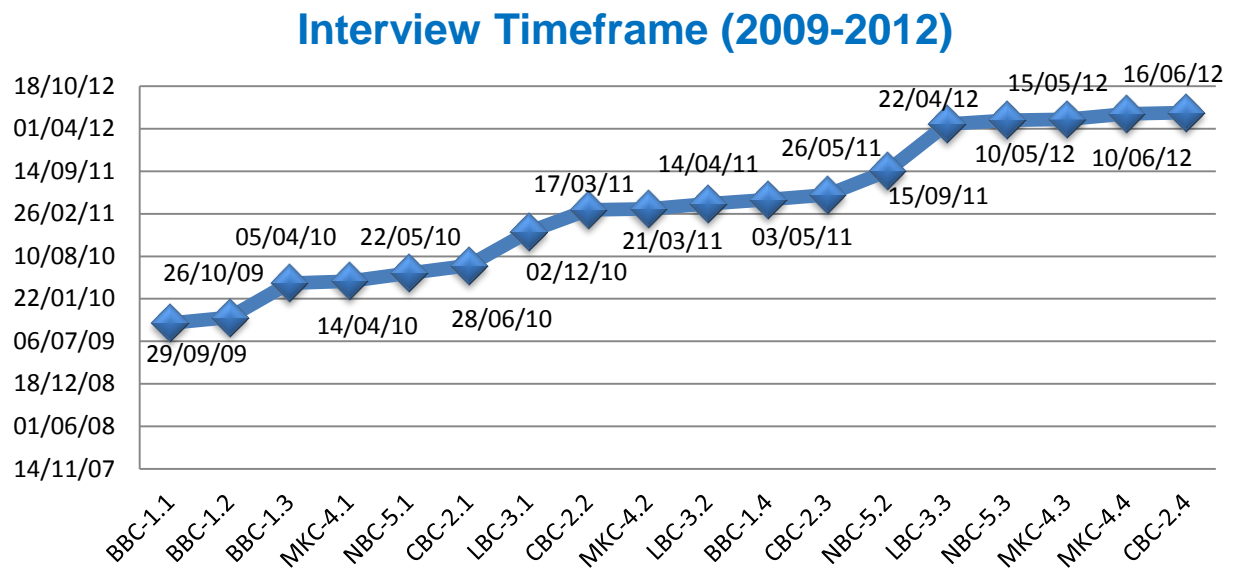


Figure: 6.2 (Field Interviews' Timeframe for Data Collection: 2009-2012)

Source: Nasrullah Khilji

6.4 Processing the Case Studies: Narrative Method

The local government was going through a significant time of transformation as it came to terms with the reduced funding available as a result of the UK government comprehensive spending review in 2010. This has resulted in an increased pressure on local government to work more efficiently and effectively within reduced budget and financial constraints. The UK local authorities expected that innovation in their ICT strategy would continuously help them to achieve productivity whereas KM was expected for increasingly flexible mobile working solutions. However, knowledge management was perceived at an embryonic phase in the local government to meet their ever rising expectations of service quality and value for money.

Some 18 unstructured field interviews were carried out to collect primary data for analysis. The field interviews were then transcribed before the researcher comprehended the information. Morse (1994) described comprehending as an act of acquiring full understanding of the setting, culture and to study the topic before commencing a research fieldwork. In this case study, comprehending is a step when the researcher reads transcripts several times to get close to data and understand the

issues underlying the words. From interviews and direct observation, the researcher realised that the pace of technological change was fast and for this reason the local authorities of the future would be very different from how they look like today.

From the field interviews and collected data, the researcher observed that the local government was interested to achieve maximum benefits from emerging technologies. The ICT strategy will continuously enable the sharing of knowledge and intellectual assets across a number of locations to provide planners a flexible back office environment for the staff support behind the scenes and better delivery of services (MKC, 2012). In this study, the field data was collected and analysed to demonstrate exclusive evidence from each participating council to achieve efficiency and effectiveness in the planning system.

Semi structured interviews were conducted to capture the information from interviewees. The e-mail correspondence, direct observation and survey questionnaires were applied along with field interviews to collect data in carrying out the main fieldwork. The field interviews were applied on the same format as developed during the process modelling study to collect personal opinion of experts from their own experiences. The collected data from conducted interviews were clustered using the coding format for data synthesis. Data clusters were used because of the emerging and constantly changing dynamic pattern of data and the intensity of researcher's understanding about the subject.

In the coding process, each case study participant (local authority) was specified its own primary, main and sub-codes. In this process, codes for first round of interviews were amended unless the researcher conducted the final round of field interviews. The consistency was maintained by applying the constant comparison in interpretation of statements. The researcher allowed the coding clusters comparison as expressed by the interviewees to be central for narrative, data analysis and synthesis. The participating local authorities, the key interviewees' title and interviews codes are shown in the table below (Table 6.1).

S. No.	Research Interviewee's Job Title	Local Council Code / No. of Interviews	Interview's Sub-Code
1	Assistant Director (Planning and Housing)	BBC / 4-Interviews	BBC-1.1
2	Head of Planning Policy		BBC-1.2
3	Office Manager Planning Support Services		BBC-1.3
4	ICT Strategy and Development Manager		BBC-1.4
5	Management Support Officer - Service Development Sustainable Communities	CBC / 4-Interviews	CBC-2.1
6	Director of Sustainable Communities		CBC-2.2
7	Assistant Director of Customer & Systems		CBC-2.3
8	Head of ICT		CBC-2.4
9	Policy Monitoring Officer	LBC / 3-Interviews	LBC-3.1
10	Acting Technical Support Manager and Business Process Review Project Manager Development Control		LBC-3.2
11	Planning Project Manager		LBC-3.3
12	Planning Enquiry Officer	MKC / 4-Interviews	MKC-4.1
13	Assistant Director of Planning		MKC-4.2
14	Joint Head of Development Management		MKC-4.3
15	Assistant Director IT and e-Government		MKC-4.4
16	Principal Development Control Officer	NBC / 3-Interviews	NBC-5.1
17	Planning Delivery Manager		NBC-5.2
18	Head of Customers, ICT and Cultural Services		NBC-5.3

Table: 6.1 (Interviews, Interviewees and Local Authorities' Coding)
Source: Nasrullah Khilji (Appendix D-1, Section: D-1.6)

The transcription of collected data was applied for data analysis to assist the researcher in clustering the concepts and ideas about knowledge management in the planning system. Clustering involved searching the data for related categories with similar meaning. This analysis was categorised as thematic analysis as the main purpose during the beginning of the analysis was to look for themes (research key propositions). When sets of themes were formed, more advanced analysis was employed to look for clusters and patterns among knowledge domains (see for detail Appendix E-1).

In this study, any data that interpreted a significant meaning was extracted and given a code, which was then organised under key categories. These approaches were repeated for each interview session and the meanings were organised into categories of main and sub codes. It became obvious to bring several supportive and preventive knowledge factors under tacit and explicit domains as described in the table (Table 6.2).

Main - Codes	Sub - Codes	Category	Frequency of Occurrence
MC-1: Knowledge Applications	SC-1.1 - ICT Infrastructure SC-1.2 - Network DMS - CRM - GIS - ERP SC-1.3 - Storage and Retrieval of Data SC-1.4 - Microsoft Office Applications SC-1.5 - SMS and Smart Phone Apps SC-1.6 - Online Reports Provider SC-1.7 - Design and Plan Review SC-1.8 - Technical Specifications	Explicit - Supporters	21.92%
MC-2: Knowledge Channel	SC-2.1 - Face to Face Meeting SC-2.2 - Team and Group Working SC-2.3 - Creation of Knowledge Models SC-2.4 - Use of Smart Devices i.e. Wiki	Tacit - Supporters	14.38%
MC-3: Individual knowledge	SC-3.1 - Sharing Individual Expertise SC-3.2 - Motivation and Willingness to share knowledge SC-3.3 - Competency and Capability	Tacit - Supporters	12.33%
MC-4: Group Knowledge	SC-4.1 - Planning Teams Coordination SC-4.2 - Team Relationships SC-4.3 - Creation of New Knowledge	Tacit - Supporters	15.07%
MC-5: Knowledge Preventers	SC-5.1 - Non Sharing Knowledge SC-5.2 - Lack of Awareness SC-5.3 - Organisational Culture SC-5.4 - Political Uncertainty SC-5.5 - Time Factor SC-5.6 - Financial Constraint	Tacit - Preventers	25.34%
MC-6: Knowledge Supporters	SC-6.1 - Planning Project Structure SC-6.2 - Communication Channels SC-6.3 - Category of Knowledge Teams SC-6.4 - Routine Activities Schedule SC-6.5 - Training and Development	Explicit - Supporters	10.96%

Table: 6.2 (Main and Sub Codes for Knowledge Management Tacit and Explicit Domains)

Source: Nasrullah Khilji (Adopted from Appendix: E-1, Section: E-1.1)

The researcher tried to demonstrate the most significant groups of key knowledge factors as evident from fieldwork. One way of identifying significance was by studying the interview transcription, looking at the whole context and issues in order to find things that were emphasised by the participating local authority. Another way of finding significance was by doing mixed data analysis to trace out the key factors with frequency of repetition. Numerical counting in this study analysis was used to look at the frequency to assess the importance of each knowledge factor, the assumptions were also applied in the data analysis, when the interviewee mentioned a particular term or issue the most, the topic talked about was probably important for data analysis (Appendix E-1, Section: E-1.1).

In data analysis, the research established categories were treated uniquely to calculate the frequency of supportive and preventive knowledge factors repetition. Social interaction was considered as the basic factor in knowledge management. ICTs are often regarded as the enabler for the efficient and effective implementation of knowledge management (Maier, 2007). In a technology enabled setting, boundaries between products, services and across enterprises become blurred that create context for entrepreneurship, innovation and dissemination of knowledge (Dioguardi, 2010).

To understand how the local government was responding to the technological advancements and planning system innovations for integrated knowledge management, the three key research propositions were examined: innovative communication channels (knowledge identification), effective coordination strategy (knowledge integration) and integrated KM (knowledge creation) to review key research objectives .

The prominent knowledge supporters and preventers were the dominant clusters with high percentage of repetition. The main clusters were sub divided according to each participating local authority's individual planning system circumstances and their ICT strategies in context of innovation, channel shift, smart and sustainable development. The key clustered data was used towards addressing the major research questions and researcher's key propositions with categories of main and sub-codes recurrence as graphically illustrated in the bar charts below (Figure 6.3a and Figure 6.3b).

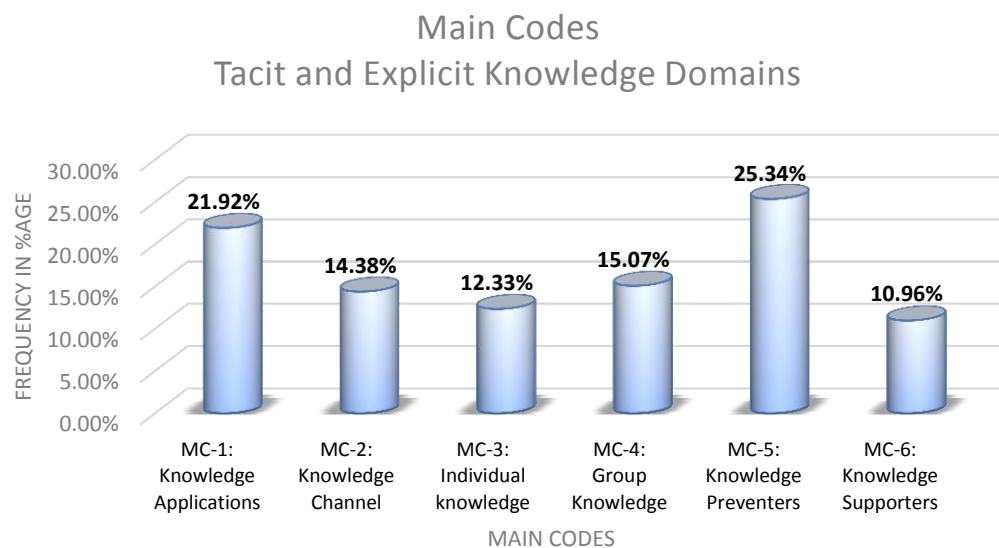


Figure: 6.3a (Key Supportive and Preventative Knowledge Tacit and Explicit Factors' Frequency)

Source: Nasrullah Khilji (Appendix E-1: 'Section: E-1.1A')

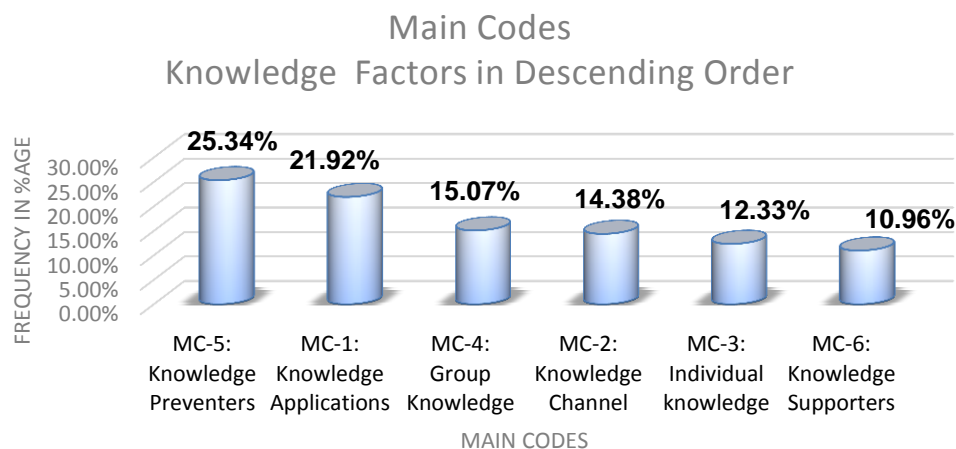


Figure: 6.3b (Key Knowledge Factors in Descending Order)

Source: Nasrullah Khilji (Appendix E-1 'Section: E-1.1A')

The research study contacts were those who had responsibility for managing the authority's efficiency programme, budgets, strategy, performance and other areas associated with planning practices. The implementation of an effective ICT strategy through affordable innovation made it possible to identify key knowledge elements for sustainable development. During the process modelling study main and sub codes were

identified to analyse the categorisation and frequency of tacit and explicit knowledge domains. The key identified factors interpretation is explained in Appendix-E-1(Section E-1.1A), which is graphically illustrated in the following bar chart (Figure 6.3c).

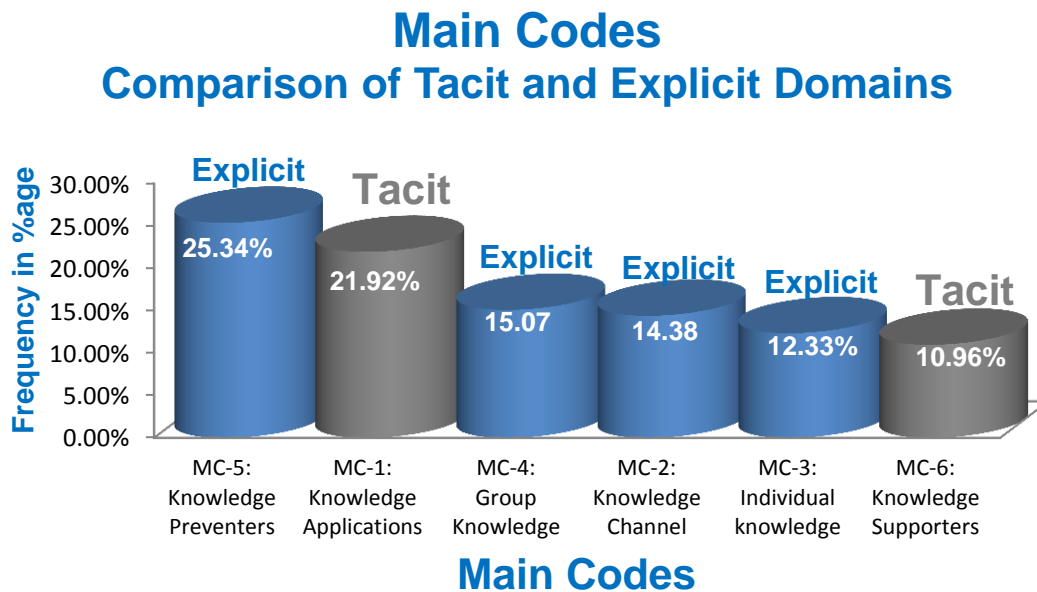


Figure: 6.3c (Knowledge Tacit and Explicit Domains)

Source: Nasrullah Khilji (Appendix E-1, 'Section: E-1.1A')

6.5 Case Study Investigation

The local government planning system became increasingly under pressure to gain efficiency by providing faster, accurate and consistent services to citizens. The employment of an integrated knowledge based planning system was assumed to deliver better services with improved coordination, motivation and training. The researcher expected that the proposed pragmatic framework would give value for money with essential efficiency and key benefits by:

- *Reducing work pressure by employing self-service option*
- *Providing a consistent and accurate solutions to all stakeholders*
- *Reducing training time by providing instant access to knowledge database*
- *Improving a rate of First Contact Resolution (FCR)*
- *Creating a dynamically FAQs for fast solution to common issues*
- *Reducing telephonic inquires and call durations*

From the fieldwork it was observed that citizens would like fast and nonstop access to information and public services online. From the case study findings an integrated knowledge based planning system was suggested to ensure that stakeholders access to the relevant information in real time.

6.6 Case Study Objectives: (Addressing Research Question)

An investigation was carried out within each participating council to examine the transformation for an integrated knowledge based planning system. This study investigated the local government to evaluate the ICT strategies in terms of their key initiatives to answer the research core question. The research key objectives were addressed in the context of the planning system transformation to develop an integrated knowledge based planning system. The main research evidences were gathered from literature review, documentation, websites and printed reports as secondary data sources, where as the primary data was collected from key methods of field interviews, questionnaires, online forums and e-mail correspondence. The participating local authorities were engrossed in this study to answer the research main question by addressing set of key objectives to fill the identified research gap as discussed below.

6.6.1 To investigate information systems and information management practices of the UK local authority's planning system to determine how they shape Knowledge for sustainable development.

A conventional study of the planning and development brought an opportunity to evaluate the planning system on the basis of past experience of research participants about sharing and managing their expertise. The key elements of knowledge management were identified to articulate the ways in which planners were observed more productive with the integration of technological tools. The planning information management system was examined to play a crucial role in sharing and managing various kinds of expertise at different levels of planning and development. The researcher tried to examine the planning system for sustainable development perspective by linking technologies with innovative communication channels, effective coordination strategies and integrated knowledge management.

The field surveys were conducted among planning staff, who were either engaged in the planning application process or playing a supportive role. The major participants interviewed in this study were experienced planners. Staff interviews were actually carried out typically between 60-90 minutes long. In interview sessions a semi-structured approach was adopted with open ended questions to allow the participants to share their own experiences about ICTs and KM in their planning processes (see Appendix: A-1 'Section A-1.4', Appendix B-1 and Appendix D-1).

All five participative local authorities were investigated have broadly similar processes and systems. The planning systems in the local authorities were principally divided into five major phases. Phase one included the initial inquiry and submission stage where the planning application was submitted to be dealt with by development control in the planning authority (1st Phase). Applications could be submitted by hand, post, email or through the planning portal links on the council's website. Their preferred method of receiving applications was electronics via the planning portal 'www.planingportal.gov.uk'.

The applications could be processed more readily and easily through planning portal and therefore it might be registered more promptly online. During the second phase of the planning process a submitted application had to go through a process of validation (2nd Phase). In the third phase, the participating councils agreed that whenever an application was received, it was important for them to consult any other relevant departments and to share the information that might be able to provide the planner with expert advice in the third phase (3rd Phase).

The feedback and comments through public consultation were collected in the fourth phase (4th Phase), which were then summarised in the final report. In the fifth phase the decision was taken with the recommendation for either approval or refusal (5th Phase). All five participating authorities responded that it was equally important for them that any comments that were made on a planning application would be publicly available and might be published online through their web portals, which was hyperlinked with planning portal.

The participating councils agreed that their information management systems were always required to be supported by evidence based policy development both in developing new policy and evaluating the outcomes from existing policies. They believed that using information effectively in decision making directed them to better policy and improved services. They also agreed that the use of information management practices in planning system offered to support knowledge sharing that could generate a fuller picture to enable enhanced decisions to be made towards smart and sustainable development.

The Information and communication system was found as a key component in Milton Keynes Council for planning system transformation, which was considered as an opportunity to unlock the door to ICT enabled approach in delivering better and more cost effective services. The MKC vision for transformation was not just focused on better technology; it was rather about better governance of ICT projects. The executive board of MKC believed that they wanted to be able to filter their knowledge management initiatives to stop doing things that do not add value. The local government needed to be able to nurture good ideas and to make critical projects a success, both in terms of what they deliver and what they price. The participants mentioned in their responses that they preferred accountability and ownership of their information system to define their priorities to achieve sustainable development.

It was observed during the fieldwork that the planners engaged in the planning system were usually confronted with a variety of challenges where a single planning document required attention and approval from various units. It was therefore important to create an integrated knowledge based system that supports the aspiration to promote intra as well as inter departmental KM.

The existing planning system of participating local authorities was observed for their technological and human capabilities as a socio-technical system. The participating local authorities' responses about their Information management system, their key challenges, vision and strategy are quoted below (Table 6.3).

S. No.	Local Council	Key ICTs' Challenges and Council's IMS Vision for KM
1	BBC-1 Interview (BBC-1.3)	<i>It is a challenging issue to demonstrate that ICT is supporting quality services to meet the requirements of both internal and external audit. It is challenging for the council to ensure that the applications and development teams identify that the council maintains the best use of the latest technology to facilitate efficient and effective service delivery, ensure business requirements are accurately reflected in future technology plans and that senior decision-makers are aware of the opportunities presented by any investment in new technology, managing the integration of external software solutions and where feasible, developing, integrating, implementing and maintaining application software solutions, including third party software to ensure better knowledge sharing culture.</i>
2	CBC-2 Interview (CBC-2.2)	<i>IMS resources have to be more effective to meet the requirements of the council to do business. As the CBC becomes more reliant on ICT, the service has to respond with 24 hour availability of services. Moving our infrastructure to a fully managed Public Services Network (PSN) computing environment will enable ICT to meet this challenge and enable the Council to select the applications it needs in the most appropriate and flexible way with KM features. This may even result in applications being accessed on a SaaS.</i>
3	LBC-3 Interview (BBC-3.1)	<i>Effective from November 2011 'Project Genesis' will see LLCP, for which Civica is an IT partner, deliver all core ICT operations for the Council in order to achieve savings and enhance services, including ICT-based innovation to change access to and use of local services. It is crucial that the new partners will set up a new</i>

		<i>programme management office to support and focus Luton's transformation initiatives in order to secure further savings.</i>
4	MKC-4 Interview (MKC-4.1)	<i>It is essential to ensure that the Public Access Service Group needs to provide a 'One Council' approach to customer service and bring together the Public Access, IT and Property functions. We have to make sure customers receive a consistent experience when contacting the Council and do not have to make multiple contacts to different departments to fulfil their requests. There are increased opportunities for customers to access services on line as customers would prefer it this way. There is ownership of customer enquiries from first contact to knowledge based system resolution.</i>
5	NBC-5 Interview (NBC-5.1)	<i>The IMS Strategy has been compiled at a time when the organisation is going through an unprecedented amount of change. A recent Government Comprehensive Performance Assessment (CPA) judged Northampton Borough Council as "below standard". The organisation's priority now is the implementation of changes to create excellent services and to transform the whole culture and ethos of the Council. In addition to this, the government target for Implementing Electronic Government (IEG) is getting ever closer putting further pressure on priorities. Financially the Council has to make significant savings if it is going to meet all of its commitments in the program over the coming years with optimise efficiencies based on knowledge.</i>

Table: 6.3 (ICT Challenges and Vision in Participating Local Councils)
Source: Quoted from Field Interviews

6.6.2 To assess the nature of the socio-technical system in the local authority's planning system and to show how this system supports various roles through its constituent elements (business needs, human resources, IT and socio-organisational communication) that affect the sustainable development.

To explore the dynamics of knowledge management in the planning system, data was collected through several sources including; interviews, e-mail correspondence, online forums, minutes of meetings and direct observation in the South East Midlands' participating local authorities. The interview participants were normally senior planning staff involved in the planning support services for the new development or extension decision and from part of the core team responsible for the planning application's processes. This study was focused on developing an overall understanding of the planning system of knowledge management between planning teams engaged in various planning and development processes.

From a hypothetical perspective, the key challenges among the research participating local authorities were to demonstrate the value creation potential from a successful technological implementation in order to achieve an integrated knowledge based planning system. It was a challenging issue for council to know how key knowledge elements play their part directly or indirectly to influence the planners' performance. For large organisations like UK local government one of the key activities was to effectively share and manage the resources and expertise of different departments and units in relation to financial and operational efficiency.

The most important focal point in this research study was therefore to investigate how the relevant knowledge was managed among the planning teams and how it was made available to cross functional teams that needed it during the planning process. From the fieldwork it became possible to develop a hypothetical planning framework, which was found helpful to distinguish between human and technological resources for integrating the dynamics of supportive and preventive factors of KM in the planning system to encourage the hybrid socio-technical system (Figure 6.4).

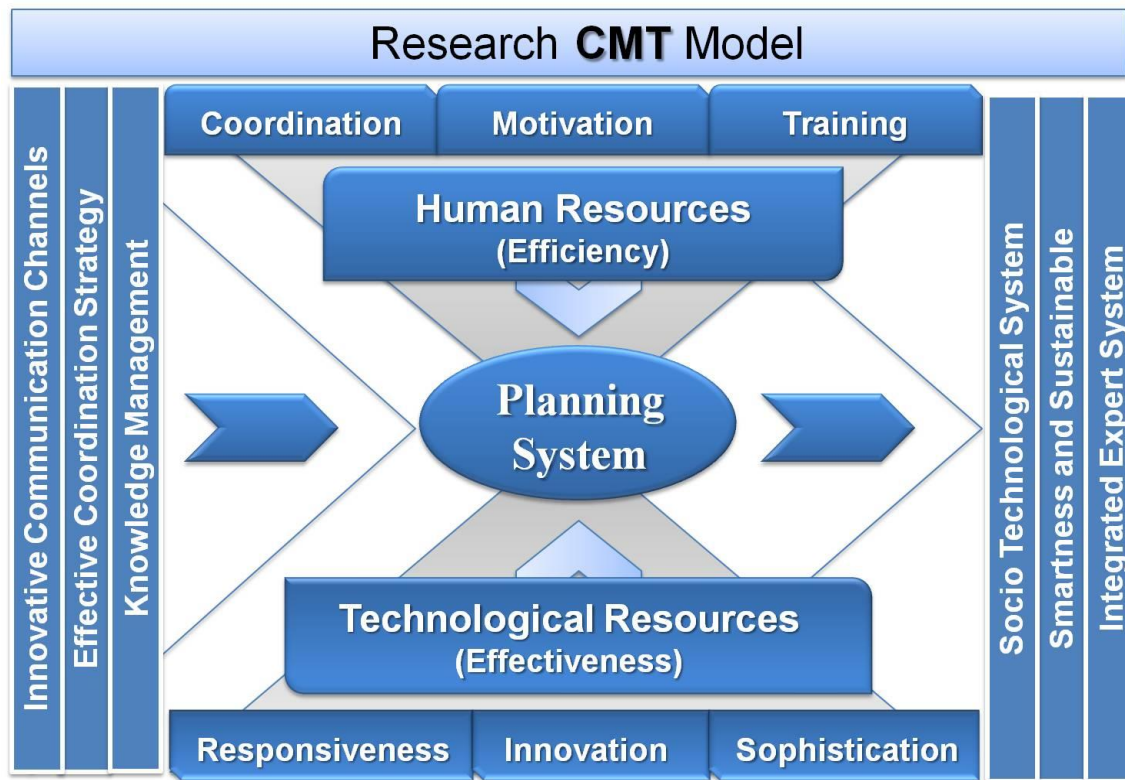


Figure: 6.4 (CMT Model-II: Research Basic Propositions 'Coordination, Motivation and Training')

Source: Nasrullah Khilji developed from CMT-Model-I 'Figure 6.7'

From the fieldwork, the researcher observed that strong coordination, high motivation and effective training were the three fundamental factors to enhance the efficiency of human expertise and to improve effectiveness of technological integration in the UK local authority. The proposed model is illustrated in the research pragmatic model 'CMT Model-II' above (Figure 6.4). This model was derived from the process framework 'CMT Model-I' (Figure 5.7), which was presented in chapter five (Ch-5).

With a contemporary study of the existing planning system, it was helpful to have the opportunity to evaluate on-going activities of the planners' engagement in the planning system to explore how knowledge was managed between different planning units. To share knowledge between different levels of expertise in different planning units required a capability of linking emerging technologies into the innovative planning system for efficiency and effectiveness as shown in the research theoretical 2Es Model, which is graphically illustrated below (Figure 6.5).

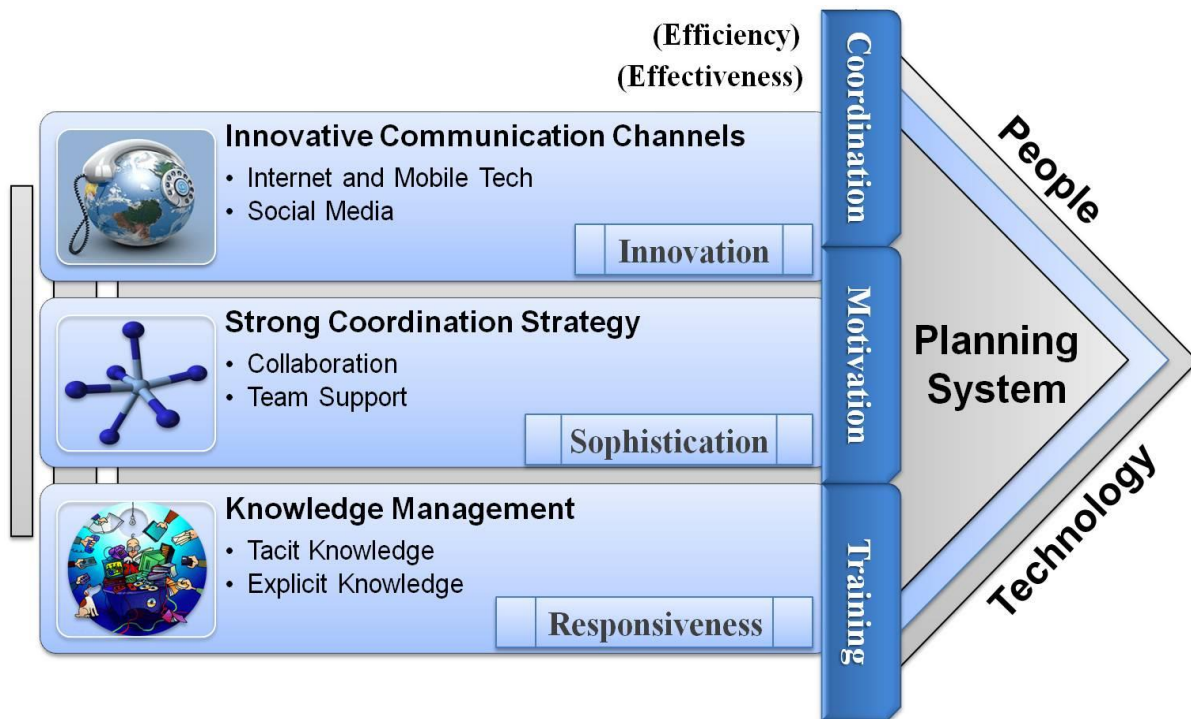


Figure: 6.5 (2Es Model: The Concept of 'Efficiency and Effectiveness' in Planning Process)

Source: Nasrullah Khilji 'Adopted from CMT-Model-II'

Efficiency 'Human Aspect / Approach'

All five participating authorities agreed and responded that the key benefits to be achieved from an integrated knowledge based planning system would be related to their staff performance efficiency in the planning system such as:

- *Pre-project consultancy and online information access*
- *Online application process and progress tracking*
- *Staff coordination to avoid duplication of activities*
- *Using e-documents, repositories and online processing*
- *Knowledge sharing and access to data and document resources*
- *Remote help, guideline, support, consultation and notification*
- *Online e-consultation, discussion, and appeals*
- *Internet based complaints and enforcements*

Effectiveness *‘Technology Aspect / Approach’*

The research participants also responded that some of the key advantages to attain from an integrated knowledge based planning system would be technological effectiveness during the planning system such as:

- *Innovative communication channels and non-stop planning application registration*
- *Strong and effective planning co-ordination strategies*
- *Sharing, transfer and management of knowledge for an integrated ICTs*
- *An embedded and fully integrated GIS tool with digitised DMS*
- *Social interactive methodologies for community participation*
- *Customer relationship management in interactive format*

The above (2Es Model) for efficiency and effectiveness was focused towards a socio-technical system (STS) approach. The socio-technical system was actually referred to as the organisational development and work design that was relevant to the interaction between people and technology in workplace. The STS term referred to the interaction between society's complex infrastructures and human behaviour by combining human and technological resources to achieve efficiency and effectiveness (Figure 6.5). The councils already considered equipping their staff with innovative technological tools for improved performance. They had a dilemma common to many councils to outsource their ICT needs for better performance.

Luton Borough Council outsourced its ICT services to Civica under a 10-year contract during 2011, known as Project Genesis, in a deal worth more than £34 million. Civica was hired to deliver all the council's core ICT operations, with the aim of achieving savings and improving services, including greater IT-based to local services. The two organisations set up a joint programme management office to support Luton's transformation initiatives and secure savings of around £12.6m. It was arranged by the Luton learning and community partnership as their future programme for socio-technical system. *‘when it comes to the how and the why of outsourcing, we did it because like many others we faced a huge reduction in our revenue budget of £35 million over three years followed by a further £20 million’* (LBC, 2011).

The planning teams engaged in the application process usually preferred a direct contact to the central or core team, who was basically responsible for the progress monitoring. It was noted that during the planning process that various teams performed several tasks occurring in the processes while sharing and exchanging expertise. It was observed during the case study fieldwork that the socio-technical system with knowledge based planning system would always play crucial role to enhance the efficiency and effectiveness of the planning system towards sustainable development. This was evident from the various comments and statements collected from different research participants among all participating councils during field interviews as stated in the table below (Table 6.4).

Interview: BBC 1.3	<i>Better results are achieved in the planning process with the use of the web portal for online application processing and IT tools - UNiform, Plantech, e-consultation, DMS, GIS, CRM, digitised knowledge transfer source, Word, Excel, Power point, Project management, Component matrix Technical Specifications, Council Websites, Blogs, SMS, Email and Phone etc. This is actually the approach of the Council's socio-technical system.</i>
Interview: CBC 2.3	<i>To make the planning system effective and work more efficiently, we always encourage our staff to communicate with all applicants and agents electronically, and wherever possible with better coordination during planning processes. This combines the human and technological resources for setting up a socio-technical approach to deliver better services.</i>
Interview: MKC 4.2	<i>The socio-technical system is strongly aligned to the department set standard through in house processes, to secure project quality regarding technical specifications and strict budget control; this creates a constraint for intensive knowledge sharing and using technologies appropriately to enhance staff capabilities and potential.</i>
Interview: NBC 5.2	<i>A modern, adaptable technology infrastructure that anticipates and supports dynamic change for timely and effective management information reporting and business intelligence is indeed the application of successful socio-technical system.</i>
Interview: CBC 2.2	<i>The council ICT architecture is required to reduce the complexity of integration for supporting the 'real time knowledge sharing'. It is also essential that technology provides full support to our manpower in order to achieve appropriate socio-technical benefit.</i>
Interview: LBC 3.2	<i>This is highlighted here to actively encourage e-communications for all team members as it removes unnecessary repetition and duplicate activities that helps in saving time and bring efficiencies with better impact on the planning service delivery. The combination of human expertise with the latest technological tools is the gateway to apply key features of socio-technical system.</i>

Table: 6.4 (Statements from Various Research Field Interviews about KM and ICTs)

Source: Quoted from Field Interviews

An integrated knowledge based planning system was believed requiring a continuous improvement in management performance and key procedures. An integrated knowledge based planning system was a domain specific expertise to share and manage individual expertise. In order to share expertise across functional planning teams, innovative communication channels, effective coordination strategy and knowledge management (KM) were presumed as vital factors in the socio-technical system (STS).

6.6.3 To examine the extent to which the internal management of data and information contribute to the effective management of knowledge within the planning department.

From the initial findings during the preliminary study (Ch-5) a number of challenges about innovative techniques were assessed. For example: how should the planners work together as a team; how do they define and share their resources; how to allocate and assign their work packages and responsibilities within the planning department and how to track and measure the planning staff performance. From the responses collected during this study, many of the participants agreed that 'making the right information available to the right people at the right time would enable better-value and more adaptive public service delivery through reducing duplication and error'.

There was a disagreement that how much to be gained from sharing knowledge because of the risks about the proactive approach. The concept of 'data mashing' was also discussed for the process of integrating knowledge and combining information from different sources to create knowledge, with increased value. The case study participants agreed that their council would like to make the information available in 'mashable' form, so that everyone easily use it in different ways to identify, integrate and create new knowledge. Many of the participants also agreed that their internal management of information was contributing to the effective management of knowledge within their planning support services.

The major challenge in this study was related to the tacit knowledge articulation and how planners were able to understand, share and manage a common medium of communication internally and externally. It was also important to explore how internal information was provided and shared when it was required and how hard it was to make it understandable across various planning teams. It was observed during the fieldwork that the success of knowledge management activities relied on how ICT tools were integrated to share information within planning teams who seek specific expertise to perform their assigned tasks (Table 6.5).

To enhance the planning system structure and to secure functionality in an improved process required many resources, procedural and technological disciplines. The planning system supported by planning portal with a massive use of virtual guidelines was supporting to improve efficiency and effectiveness in order to influence the overall performance of the planning system. The planning system was comprised of key activities within the local government that were linked to the emerging technologies in existing processes to develop internally improved planning information system.

From new and improved internal information processes, an integrated technological advancement was generated. This was not a simple matter of integrating different ICT tools and their applications together; it contained the required sharing and transferring of knowledge between different planning teams. In this study, the planning system efficiency and effectiveness was examined as directly dependent on the combination of human and technological resources. The following statements elaborated the impact of internal information management system within the planning system to support knowledge management for sustainable development within the five participating local authorities (Table 6.5).

Interview: BBC 1.4	<i>During the development project, planners get more data to manage using the information management system and can exchange ideas and views, which can help to improve the knowledge sharing between planning teams. Social media networks are also emerging,</i>
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	<i>planners know each other even though they are located in different locations. The effective management of information within the department has a direct influence on integrated knowledge management.</i>
Interview: CBC 2.3	The planning teams need each other's individual expertise to share procedural expertise versus documented information, so the exchange of expertise is strongly based on communication of information, usually between all team members. It is usually not easy to implement knowledge management into the planning process by itself. It is necessary to learn the implementation, and to trust in the information management and expertise sharing. Additionally, if one can read through a technical specification and as a next step it comes to the application, one immediately can also address several questions.
Interview: LBC 3.3	<i>By scanning individual or multiple paper documents, DocuScan quickly turns our pile of paperwork into digital documents. Now giving us the capability to organize and configure information to fit our personal database or networking community. Management information systems for data collection, processing, sharing, retrieval and archival have direct impact on effective knowledge management strategies.</i>
Interview: MKC 4.2	<i>Planners sticking too much to their own field of expertise and for this reason others' expertise is hardly understood during the process. Only intensive discussions help to understand the value of expertise that interacts in several planning disciplines within and outside the cross departmental activities for internal data management to influence knowledge based processes.</i>

Interview: NBC 5.2	<i>To be able to effectively provide a personalized service will require us to understand customer contact history, such as when a customer last used our services and which services they currently use or have used. This Vision is therefore to store individual customer profiles with CRM, and use them to tailor services around the customer needs. The live version of an interactive information system always has potential to promote knowledge based activities.</i>
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Table: 6.5 (Statements from Various Research Interviews)

Source: Quoted from Field Interviews

There were two major challenges for the fully integrated knowledge based planning system. The first was related to new process implementation to fulfil the criteria of the successful technological integration with human resources for knowledge sharing to secure the desired efficiency and effectiveness. The second one was to allocate the right resources and to identify the right expertise required to identify, integrate and create new knowledge during the planning system. An integrated knowledge based planning system was reflected as an indispensable solution to enhance the efficiency and effectiveness as it was discussed, mentioned and stated by the participating planners in various field interviews (Table 6.6).

Interview: BBC 1.3	<i>As soon as we have an established information link between planning teams, an organised approach to collect and transfer knowledge is easily created. People belonging to different planning units are not familiar, so it can be challenging to know who to ask during the planning process. Sometimes we even have difficulty in identifying where the expertise resides in our own planning unit. But what I really want to say is that the information management system needs an organised process, the right media and clear identification of the right person to ask: this is the key to managing planning process specific knowledge.</i>
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Interview: CBC 2.3	<i>Further programming for information management in the IDOX Acolaid planning system allows the display of more tasks to be completed by planning officers, i.e. internal consultation reminders. The facility to offer more email alerts to consultees, councillors and neighbours is useful: presently we send an automatic email alert when an application is registered to the relevant councillor but alerts do not occur when decision is made for improvement.</i>
Interview: LBC 3.3	<i>One thing that I have tripped over is that from conversations with colleagues and planning agents, a large number of local authorities' departments actually have all the tools they need to do a decent streamlined cost effective service, but they are not switched on, or configured correctly for internal systems.</i>
Interview: MKC 4.3	<i>The Public Access Strategy will contribute to the development of e-government through enabling greater online access to services. It has been an unexpected bonus that some tools we built to help planning managers understand their services might have broader use in sharing responsibility for performance between all members and planning agents.</i>
Interview: NBC 5.3	<i>The ICT Framework works in a fast changing technological environment. Few people could predict the popularity of social networking sites, Facebook and twitter etc. and smart devices, the iPhone and the iPad etc. In this context the ICT framework acknowledges the importance for knowledge sharing.</i>

Table: 6.6 (Statements from Various Research Field Interviews)

Source: Quoted from Field Interviews

Decision making in planning system was also observed involving multiple social groups and various stakeholders within and outside the organizations. For example, despite the claims of some prominent technologies such as business process re-engineering and pervasive business intelligence these could not simply be introduced into the local government by its top executives. The key measures were

required at both top-down and bottom-up communication as these were highly sensitive actions and depended on knowledge, skills and commitment of multiple groups and stakeholders at the same time. The planning process perspectives on innovation expanded the structural prospects by examining the more cognitive, social, dynamic and political issues, through which new ideas were developed, communicated, disseminated and implemented over time.

6.6.4 To study the links between the internal information and knowledge environment with the external knowledge environments of key stakeholders to assess how they affect sustainability.

This study investigated the role of technological tools for managing and sharing planners' expertise within the local authorities' planning system. Furthermore, this research study described the role of e-government through planning portal and GIS integration to share and manage the identified knowledge factors. However, various challenges such as the unclear jargons, uncertain terminologies and lack of motivation to share expertise were identified. The lack of coordination to share the expertise between the planners was identified as a knowledge gap. For managing knowledge and leadership lack of willingness to employ innovative tools for structuring knowledge were identified as unfavourable challenges to hamper an integrated knowledge based planning system. The internal planning information system in simplest form was observed as how planning authorities planned, communicated and worked with each other within the legislation and usual policy.

An integrated knowledge based planning system was considered as a helping tool to identify how stakeholders could contribute toward sustainable development, as well as the important role anyone would play in the social, environmental and economic viability. The research findings during the case study made it possible to explore the conceptual and empirical frameworks within internal and external planning domains. The research knowledge management propositions were addressed in reference to the Nonaka and Takeuchi (1995) SECI Model as discussed and examined in the previous process modelling in chapter five (Ch-5).

The Nonaka and Takeuchi (1995) SECI-Model proved how knowledge management built on socialisation, externalization, combination and internalisation activities. This model also facilitated in expanding the explicit planning domain, thus reducing the abstract and increasing the solid degree of key activities. The researcher assessed SECI-Model to justify the density of information technologies involved in the planning system to integrate knowledge and as a result the potential to improve the planning system as a technological and human resources merger.

From internal environment perspective, the strategy, vision, motivation, training, leadership, culture and behaviours were acknowledged as crucial factors to address the research key challenges. Many local authorities invested significant resources to ensure individual behaviour that support the council needs of a knowledge based community services. As delivery of government policy became more devolved, and strategic challenges more complex, the importance of knowledge capture and dissemination was observed at demand. The participants in this study believed that they increasingly work in partnership with a number of teams, departments and organisations outside of their immediate unit. In such environment, knowledge sharing was considered as essential factor for improved services. They agreed that the unsatisfactory sharing of knowledge would cost council both time and money.

The planning system in the South East Midlands' participating local authorities was introduced with a healthy and friendly social interaction by establishing public private partnership. It was strongly desired in local government that planners were required to be equipped with technological advancements and technical skills to share knowledge for sustainable developments. The social policy here referred to the activities of government and their authorized agents to meet social needs and solve social problems. Hence, learning, by which human knowledge evolved was observed as the key factor for an integrated knowledge based planning system.

For innovation in planning information system with the use of emerging ICTs, the UK local authorities were actually focusing on better societies and social life in Britain. It

was also observed from the field study and literature review that societies became more multicultural, family structures got more fluid, employment converted into more mobile and transient. During this case study it was observed that the participating councils had plans to give access to citizens to browse website links by using an integrated council's portal with embedded CRM and GIS tools.

It was also observed that in the local government planning department, their staff could understand how to find information and extract what was important. Staff interaction inside the planning department provided the right information to the public in the society for social interaction. They exercised in team working, so they learnt to work in collaboration within planning system. From this strategy, the planning staff and stakeholders were expected to learn how to access and generate new knowledge using a very wide range of tools for social interaction. Trust and trustworthiness were identified by researcher during this case study as important factors in human behaviour and economic performance.

Some of the significant statements from key interviewees to examine the link between the internal and external environments for sustainable development are narrated for review of the planning system functional activities in the table below (Table 6.7).

Interview: BBC 1.3	<i>We have developed excellent partnerships with our customers to change the culture of planning and provide accessible, open and transparent online planning services to citizens and professionals. Around 40% of applications are now submitted online. With financial and resource constraints, we need to tackle further obstacles to realise a truly online planning services in the future.</i>
Interview: CBC 2.3	<i>The Planning Portal, part of the Department for Communities and Local Government, processed its first application in April 2003 and since then has consistently hit tough targets to increase the proportion of planning applications made online. The local</i>

	<i>government is now targeting ways of making online planning even easier and more user-friendly. The local government could not have reached to this stage without the support of our partners in local planning authorities and the willingness of industry to embrace new ways of working.</i>
Interview: LBC 3.3	<i>We are streamlining the planning system, cutting bureaucracy and simplifying the rules to make the whole planning process much more accessible and efficient for both applicants and Council. Cutting down the number of paper applications has also made a major contribution to reducing the carbon footprint of the planning and other public services.</i>
Interview: MKC 4.3	<i>We need to ensure that any duplication of process is removed; smarter ways of working and communicating are introduced; and that we fully utilise technology to achieve a return on investment and encourage a channel shift to communities to self-serve and interact online.</i>
Interview: NBC 5.3	<i>We are soon hoping to trial using tablets on site to view plans. As a reduction in office space at NBC means lower costs, more hot-desks and remote working, this Council is considering to simply introducing the use of technology to support these changes effectively. We also believe to provide links to the case search that can be added to a local authority website and provide direct access to the appeals for that local authority knowledge sharing in planning and development.</i>

Table: 6.7 (Research Participants' Views on Online Planning Process)

Source: Quoted from Field Interviews

In future the new mapping service will allow showing people geographic information about their area derived directly from main information database system. The GIS link page contains a growing list of information which would allow users to view,

enquire and interact with the council as the mapping system develops. Rights of way officers work with farmers, landowners and local people to make sure that public ways, footpaths, bridleways and byways could be clear and properly maintained, so that everyone would enjoy using such platforms. The power of a planning information system comes from the ability to relate different information in a spatial context and to reach a conclusion about the relationship towards sustainable development.

Building on its existing intranet, Bedford Borough Council implemented the eKnowledge Suite, eKnowledge portal and the eLearning suite to form a complete solution as a basis for delivering their commitments on e-government. The extent to which the internal management of data and information contribute to the effective management of knowledge within the planning department, they rolled out their intranet to their staff and councillors. They decided to further expand the functionality of their intranet in near future to citizens as a personalised transaction portal. The intranet would be used to publish and manage all internal documents, members' information and administration as well as general communications between citizens, partners and staff across all departments within Bedford Borough Council.

6.6.5 To investigate the balancing of internal and external interests in the planning system in terms of the actual and potential roles for knowledge management.

The planning portal was initiated as the government's official planning website in England and Wales. The local authorities in England and Wales process and accept planning applications through planning portal. The planning system was a process where planners create a shared understanding of how the application should be validated and accepted. During the application submission phase, various points were surveyed to understand and judge the interaction between planning units to shape new ideas while using variety of ICT tools to better manage actions. The planning system was relying on information exchange practices, due to which the importance for an integrated knowledge based planning system was on demand.

To investigate the internal and external interest in the planning system, the researcher evaluated the role of knowledge management in planning system for enhanced efficiency and effectiveness. The case study empirical framework 'PKOT Model-I' (Figure 6.6) emerged from the empirical data collected during fieldwork (App D.1-E.1). The PKOT Model-I is based on four fundamental elements: *planning process*, *knowledge application*, *organizational culture* and *technological exploitations*. This empirical framework 'PKOT-Model-I' is developed from fieldwork and named as abbreviation of its 4 essential elements as graphically illustrated below (Figure 6.6).

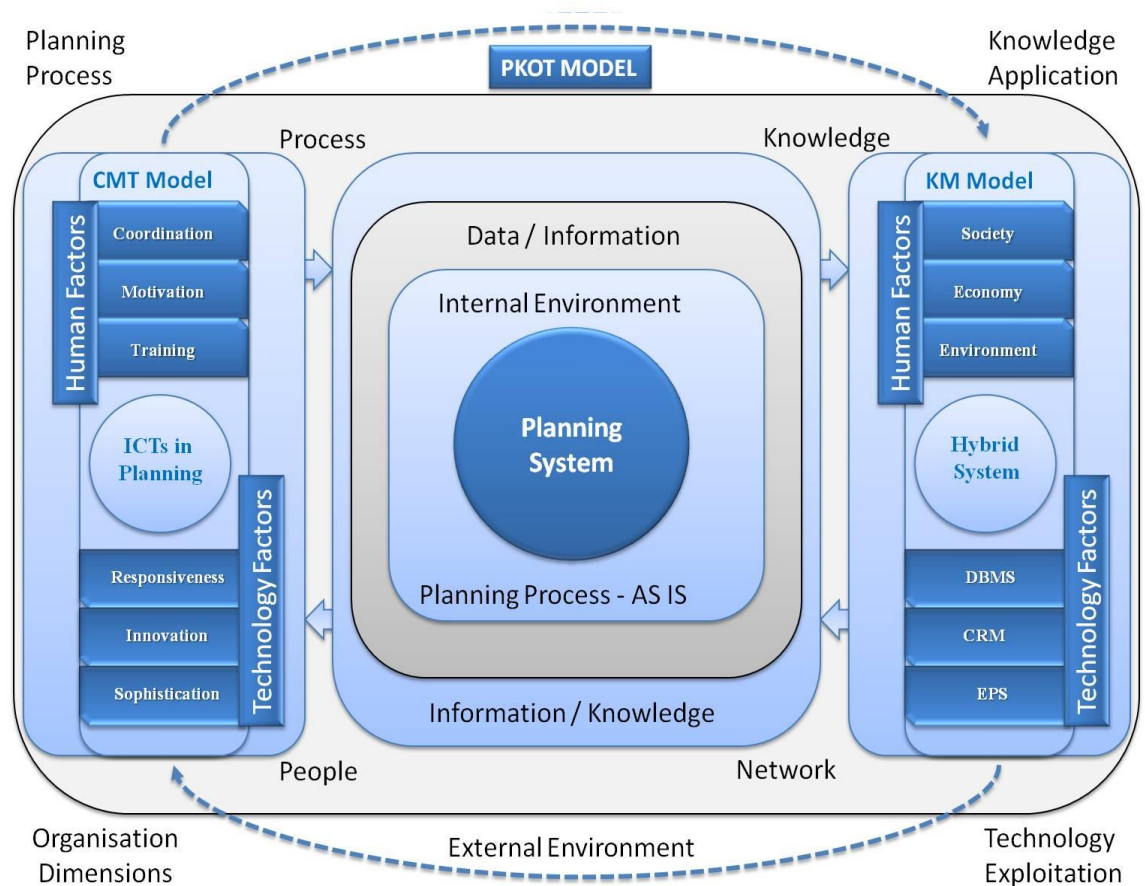


Figure: 6.6 (PKOT Model-I, 'Process, Knowledge, Organisation and Technology')

Source: Nasrullah Khilji 'Adopted from Appendices D-1 to E-1'

The knowledge management initiative alongside good information management became a core priority in the local government planning system reform. The

participating councils agreed that they would explore ways to exploit their eagerness for knowledge sharing, particularly via social networking websites. They preferred to look for different ways to establish professional and vibrant knowledge based communities of interest within their council, particularly applying the power of wiki and internet technologies to make this easier and faster for the system users.

The above research empirical PKOT Model-I, clearly illustrated the internal and external technological and human factors combination that headed towards better planning service delivery. This was an interesting approach to get the views of participating planners regarding the importance of emerging technological strategies in order to understand their internal and external environments for coordination, motivation and training instruments. The research key participants responded with positive feedback about the role of ICTs for their internal and external innovative communication channels as shown in the 'PKOT-Model-1' above (Figure 6.6).

6.6.6 To evaluate the implication of study findings for managing knowledge in the planning process where reciprocity, mutuality and sustainability are the key drivers of the outcomes.

The knowledge management and e-learning product suite of applications at local authorities included content and document management, search and retrieval, workflow, collaboration and e-learning modules. The council portal components were designed as a single personalised point of access to all information for employees, members and citizens. Implementing information management technology was the key to council's commitment towards local government '*Electronic Service Delivery*' and knowledge based initiative to work with hyper-wave that represented a significant component of the e-government strategy (BBC, 2011).

During the data collection in this study, the researcher observed that KM was recognised as a valuable asset at local government level, while examining the Milton Keynes intelligence (MKi) Observatory. The MKi Observatory was developed with a concept of 'one-stop-shop' for information about Milton Keynes and its surrounding

areas, for use by both the public and local stakeholders. The site was noticed proficient to enable information to be held, shared and catalogued.

It was built around a sophisticated knowledge management system that provided a quick access to information through a comprehensive search engine and allowed information to be stored in compliance with the latest government metadata standards. The innovative technological tools were applied to allow users to undertake data analysis, to define their own areas, and to thematically map and graph results. The MKi Observatory was a fully functional Geographical Information System, which was available to all users providing access to spatial information (MKi Observatory, 2012).

The key objective of the MKi Observatory was actually for the website to become the definitive source of data for partner organisations. Milton Keynes Council was basically managing MKi Observatory site, but the website's growth and development were based firmly around a devolved content management model supported by various agencies that were in favour of the importance of data sharing and partnership working. Due to the increasing need to work in partnership it was important for the council staff to become more conscious about the needs of others in making information on all aspects more widely available. There was positive feedback about MKi Observatory due to its unique and innovative qualities. It already had national publicity featuring in BURISA (British Urban and Regional Information Systems Association) and LARIA (Local Authorities Research and Intelligence Association). The site was also presented as a case study at Nesstar's launch event and demonstrated at the Faculty of Public Health Conference 2005.

This study was conducted to evaluate the complexity of planning system, which was actually the combination of both tacit and explicit knowledge domains. For example, managing the internet based information network for planning system was required as a daily routine task for data processing. The information system actually contained both explicit portions of knowledge and technical specification and tacit

portions implanted in the electronic online system. For example, knowledge of experience tends to be tacit, physical and subjective, while knowledge of rationality tends to be explicit, metaphysical and objective.

It was examined during the field study that the most valuable asset of today's organization was its intellectual asset, valuable than physical resources. The essential and significant evaluation of this study findings was about managing knowledge in the planning system where reciprocity, mutuality and sustainable were the key drivers as the key outcomes of this research study as stated in the tabular fieldwork findings below (Table 6.8).

Interview: BBC 1.4	<i>We at Bedford Borough Council regard KM as an intellectual asset and consider that a proportion of employees' knowledge who will retire after worked in the organisation for many years as a valuable organisational knowledge. The Council needs to ensure that as much of this accumulated experience as possible is retained within the organisation before these employees leave us at any point in future.</i>
Interview: CBC 2.4	<i>The idea that knowledge is the most valuable source of competitive advantage has been widely considered for some years in the local government. Knowledge is also considered to be the prominent resource of the local authority in terms of its contribution to the value added and its strategic significance in sustainable development. Our focus is the role of ICT in the activity of knowledge sharing, which is indeed a critical and challenging issue.</i>
Interview: LBC 3.3	<i>In order to achieve the aspirations set out by e-government, local authorities need to change traditional ways of working. Knowledge sharing is central to this change. We believe that IM emphasises delivery and accessibility of content and relies heavily on technology, while KM focuses on culture and work practices, emphasises adding value to content by filtering, synthesising, interpreting and adding context and requires on-going human input.</i>
	<i>It is acknowledged at MKC that knowledge residing in the heads of</i>

Interview: MKC 4.4	<i>individuals allows local Councils to improve and develop planning services. Indeed, individuals employed in the Council hold key information and knowledge on a vast range of subjects. However, there is evidence to suggest that only small portion of information and knowledge within a typical local authority is structured, codified and accessible. In order to capture much of the information and knowledge currently inaccessible, the strategy will focus on achieving a knowledge sharing culture whereby the interaction and communication between people will be encouraged in order to share their tacit knowledge, which will then be made explicit and readily accessible to others.</i>
Interview: LBC 5.2	<i>Individual planning officers will have a huge bearing on the success of Information and Knowledge Management. Web technologies can be used to display information and knowledge captured which make the information retrieval process quicker and more straightforward. The corporate communications team and the communications and administration group can play a key role in promoting and communicating the Information and Knowledge Management strategy and its associated initiatives in council.</i>

Table: 6.8 (Research Participants' Views about the Importance of knowledge)

Source: Quoted from Field Interviews

The researcher observed that there were many benefits to local authorities to share their knowledge, however safeguarding the privacy for individuals were the key issues to be looked after. With the implementation of modern technology, many local authorities now work largely electronically. The researcher observed that some of the local government departments were left to make their own arrangements for capturing, storing and utilising information, without coherent, unified standards and processes in place. This resulted in a divergence from common practices and in some cases a lowering of standards to deliver quality public services i.e. out of date web pages.

Majority of the local government information systems were installed and practiced digitally, which also introduced new challenges to share knowledge to deliver better planning services. All participating local authorities were observed having information that they needed for long and sustainable period because they believed that whenever their key data was irretrievable it would have a major impact on finances, legal compliance, reputation, and the planning service delivery within the local authorities.

To manage knowledge for productive outcome, the audit of knowledge management was chosen by the local government to make sure the availability of right information at the right time in the right place and for the right people to perform their job efficiently and effectively. From the case study findings it was observed that the planning system audit for knowledge management was essential to investigate the ICT strategy and infrastructure in the local government.

6.7 Chapter Summary

The outcomes from the case studies are presented in this chapter (Ch-6), by assessing the socio-technical system for enhanced efficiency and effectiveness in the planning system. The case studies were carried out within the five participating local authorities to investigate the technological integration and their consolidated ICT strategies. In this chapter, the major research objectives are addressed by interpreting the innovative communication channels, effective coordination strategies and an integrated knowledge management in the context of planning system transformation. The evidences collected and analysed from case studies in this chapter (Ch-6), are later evaluated and synthesised to achieve the research outcome by rationalising the planning system future 'To-Be' state towards smart and sustainable development in next chapter (Ch-7).

CHAPTER 7**BRIDGING THE GAP
TO THE FUTURE**

This chapter (Ch-7), is about the evaluation of evidences collected from fieldwork particularly during preliminary study in chapter five (Ch-5), and main study in chapter six (Ch-6). The collected data was synthesised to describe the research results from the exploratory process modelling study and detailed case study, to interpret the overall meaning of this research. The main objective at this stage of work was to consolidate the research results around significant themes that could reflect the responses to the questions explored in the seventh chapter to fill the gaps identified in the introductory chapter (Ch-1). The research fieldwork was evaluated to nurture a definite base to comprehend the composition of the local authority planning system. The purpose of evaluating the case study evidences was to understand how the planning system within participating local authorities is moving through transition towards future 'To-Be' state.

7.1 Case Study Findings

After conducting the main study in the previous chapter (Ch-6), findings from cross data analysis were required to bridge the gap to the future 'To-Be' state of the planning system. The data collected from each participating local authority was evaluated to generate the research results. The fieldwork data collection and analysis process was carried out to identify key knowledge factors that could influence the development and implementation of an integrated knowledge based planning system. The data analysis provided the main findings related to both tacit and explicit knowledge domains. In this chapter (Ch-7), the key findings were synthesised to prepare a report about an integrated knowledge based planning system to achieve the planning system future 'To-Be' state for smart and sustainable development.

7.1.1 Summary of Evidence

The following outcomes were drawn from fieldwork evaluation and data analysis:

- The foremost aim of the five participating local authorities was to deliver planning services to their local communities efficiently with the help of innovative tools. These included internet, mobile phones, cloud computing, call centres and finally the traditional way through customer support desks and councils' town offices. The participating local authorities aimed to provide improved planning system for: applicants, agents, businesses, investors and other governmental agencies in a convenient ways that suit each of them as per their different needs.
- One of the most relentless preventers of an integrated knowledge based planning system was people's resistance to change, especially planners who did not usually motivate to change their work habits. The lack of coordination among planners and their attitude towards training were identified as major preventers as many of them did not motivate to learn new planning procedures and technologies. However, there were plans in place to tackle such preventer but the lack of extensive and likable ICT training affected this challenge to some extent.

- IT changes in planning processes was a noticeable preventer, when the planners manipulated the technology advancements in their work cycle, they started to fear losing their powers so they tried to resist. The researcher noticed that it was essential to change organisation's culture for coordination, motivation and training especially with the poor execution of change management from the development projects' managers to achieve efficiency and effectiveness as illustrated in the pragmatic CMT Model-II in chapter six (Figure 6.6).
- According to new planning reforms, it was essential for local authorities to encourage communities to use e-consultation, web portal and smart phone apps. There was always some resistance from citizens to acquire, in most situations, they did not mind trying new things as long as they got a good quality service or benefit. This could be the result of many direct and indirect motivations. One motive was that the smart mobile phone usage in UK was very high. The phone penetration stand at 90% in the UK (much higher than PCs) and smart mobile phone usage would dramatically increase in the coming years (Deloitte, 2015). Assistant Director IT and e-Government at Milton Keynes Council stated in his interview that *'the smart phones will be very cheap in future and the use of mobile technology apps will be more widespread within the local government in the coming days'* (Jewell, 2012).
- The council already offer various services through internet and mobile technology, which required only simple technical knowledge. This means that planners were ready to share and manage their knowledge by using emerging ICT tools to share and deliver 'innovative' and 'just in time' planning services. This indicated that the use of new technology was one of the supportive factor of knowledge management. It was supportive for users if the instructions were simple enough, given that they needed to have the minimum level of education. This encouraged the council transition to provide the public services on convenient channels such as mobile phones. A summary of the thematic findings within participating local authorities based on their interview statements is narrated below (Table 7.1).

Theme	Council	Summary
1. Planning System Reform	BBC Interview: BBC-1.4	<i>In becoming a Unitary Authority Bedford Borough Council took responsibility for the reform of planning services previously provided by the former Borough and County Council. In many areas this meant creating a single service where two might have existed under the previous structures. The Localism Bill is also under review to be completed and presented soon, it is expected that this will make a significant transfer of power over planning matters from central government to local communities.</i>
	CBC Interview: CBC-2.4	<i>Improving the quality of life for the citizens in Central Bedfordshire Council is by innovative planning system. Improving and increasing the number of online services that are delivered over the internet. This will include the need to further streamline meetings, consult via social networking sites and provide geographical information service capability for reporting of location based requests. Planning reforms drive increased value for money in service provision.</i>
	LBC Interview: LBC-3.3	<i>Luton's plan for its planning system is based on the economic participation of key priorities, locally and regionally. LBC wants that they need to focus their activities to cover skills and employment for adults and young people who are not in education, employment and training (NEET) and young people at risk of becoming NEET and they also need to focus on stimulating enterprise in the town, particularly in the areas of higher deprivation. All activities in this prospectus align with the priorities of the Luton Sustainable Community Strategy 2026 that support the Local Area Agreement targets for each activity. Activities also contribute to priorities contained in the Regional Economic Strategy (RES) Economic Participation goal.</i>
	MKC Interview: MKC-4.4	<i>Following the launch of the Sustainable Communities Plan in February 2003, the Government designated four Growth Areas in the South East of Milton Keynes and made a commitment to set up Local Delivery Vehicles (LDVs) with the necessary powers to drive forward investment and development. This will establish what weight the policies carry in the determination of planning applications, depending on their level of conformity with the NPPF.</i>

2. Planning Policy	NBC Interview: NBC-5.3	<i>The Northampton Local Plan was adopted in 1997. Parts of this plan are now considered to be out of date due to changes to national policy or more recently, adopted guidance. The Northampton Borough Council focus is on improved service delivery and processes rather than technological advancements.</i>
	BBC Interview: BBC-1.4	<i>The Planning Team is responsible for looking at the natural and built environment of Bedford Borough Council and determining a sustainable planning policy about what development is suitable for the borough at a given location and a given time.</i>
	CBC Interview: CBC-2.4	<i>CBC planning policy determines what the growth needs are of the area and provides a plan as to how these needs can be met. This policy looks at the infrastructure needs of the area and seeks to coordinate new provision. CBC planning policy also provides the context for making decisions on applications.</i>
	LBC Interview: LBC-3.3	<i>LBC current planning system offers information about all types of development, planning and building control, planning policy, conservation, trees and other planning related services such as the economy and employment in and around Luton.</i>
	MKC Interview: MKC-4.4	<i>The Local Planning Policy, adopted December 2005, sets out how Milton Keynes will be developed up until 2011. It includes details covering the amount and location of housing, employment, shopping and community facilities required. The Local Plan will eventually be replaced by the LDF in 2012.</i>
	NBC Interview: NBC-5.3	<i>The National Planning Policy Framework was published by the Department for Communities and Local Government in March 2012 and all plans, either Local Development Plans or Neighborhood Development Plans, must be in conformity with it. It replaces the old National Policy Statements and Planning Policy Guidance at NBC.</i>
3. ICT Strategy	BBC Interview: BBC-1.4	<i>The Infrastructure Team ensure all ICT corporate support functions operate efficiently and effectively in serving the Council's requirements including maintaining the integrity and security of ICT, voice and data networks, DCs, Service Desk and support functions.</i>
	CBC Interview: CBC-2.4	<i>The Central Bedfordshire ICT Framework is framed within the timetable from January 2012 to April 2016 and is therefore aligned to the term of the current Council plus one year to enable any new Council time to review its own ICT Framework.</i>

	LBC Interview: LBC-3.3	<i>Simon Downing, chief executive of Civica, said: "Luton Borough Council is taking an innovative approach to the urgent challenges all authorities are facing and we look forward to working together to build on our long-term relationship. The provision of managed and outsourced services in areas where the company has specialist expertise is fundamental to Civica's strategy and we are delighted to support a partnership that will become a centre of excellence in Luton ICT service delivery."</i>
	MKC Interview: MKC-4.4	<i>The aim of ICT strategy at Milton Keynes has been to create a sharper and clearer focus to the priorities established for the Council's ICT Services over the next 3 years with the Council's Internet services and its web presence and the Environmental Impact of ICT and ICT related Training with private partner.</i>
	NBC Interview: NBC-5.3	<i>The purpose of this Council's ICT strategy is to support the Council in delivering its Corporate Plan and ambition to be one of the best Council's in terms of Public Service. In order to achieve Council's ambitious programme to deliver excellent services in a climate where finances are continually under strain, Council will need to enable the transformation of services, fully exploiting ICT and ensuring NBC has a modern, agile and resilient infrastructure in place to support such aims.</i>
4. e-government	BBC Interview: BBC-1.4	<i>A leading supplier of collaborative knowledge management and e-learning software has recently announced that Bedford Borough Council will be using their knowledge management software for all its current internal processes. Employees and members will be able to access documents and streamline daily activities through an updated intranet system. Bedford Borough Council e-Government policy is headed up by Larry McArdle who manages a team of approximately 70 staff. ICT support the 2,500 PCs and laptops at Borough Hall as well as the ICT for the elected Councillors. They also provide broadband facilities and support to over 80 schools, provide ICT desktop support to 50 schools, youth centres and the People Referral Unit and to several corporate sites and 6 libraries.</i>
	CBC Interview: CBC-2.4	<i>Implementing information management technology is a key to our commitment to the government's Electronic Service Delivery initiative and working with e-planning is a significant component of the Council's e-government Strategy. The CoCo 2012 element focuses</i>

		<i>the CBC on achieving its Central e-Government Code of Connection security compliance. This will involve the Council in undertaking work to harden its perimeter and internal security controls to prevent a security breach. The roll out of security tokens to third party uses and the implementation of Logarithm protective monitoring.</i>
	LBC Interview: LBC-3.3	<i>The e-enabled Customer Service Centre comprising a centralised one-stop Shop and Call Centre have already achieved significant benefits, proving Luton Borough Council is an organisation that can meet and exceed customer service requirements, embrace the e-Government agenda and implement projects that make a good Council excellent. LBC knowledge management and e-learning product suite of applications includes content and document management, search and retrieval, workflow, collaboration and e-learning modules. The LBC planning portal component gives a single personalised point of access to all information for everyone.</i>
	MKC Interview: MKC-4.4	<i>At MKC it is desired to build on core e-Government ICT systems platforms, standards and investments, underpinning a drive for financial efficiencies and savings; particularly building upon key metrics and business cases and pushing forward key systems integrations, for example, in relation to the LLPG, CRM and e-Government Services. The SAP core financial systems and developments; includes SAP HR, SAP Payroll, SAP, CRM (the central customer facing database system and interfaces to four application systems used by Direct-MK and which will be further developed) and in future SAP Business Objects, SAP Data Warehousing and SAP Employee Self Service (ESS) will be strengthen in future for e-government services.</i>
	NBC Interview: NBC-5.3	<i>The Council is strategically planning and Implementing Electronic Government (IEG) to support improvements in service delivery for customers, in line with the Recovery process. Some progress has been made including a 'Citizen Focused Services' programme which is one of the key themes of the Recovery plan. A summary of the Council's progress on Customer Focused Services includes 'the recruitment of an IEG Programme director, the submission of the Council's IEG4 and more realistic IEG 4.5 statements and involvement in the National Project LAWS/APLAWS'.</i>

5. Knowledge Management	BBC Interview: BBC-1.4	<i>Building on its existing intranet, Bedford Borough Council has implemented the eKnowledge Suite, eKnowledge Portal and the eLearning Suite to form a complete solution that will form the basis for delivering its commitments on e-Government. Bedford Borough Council is interested in an integrated knowledge based planning system that provides a simplified experience across the entire lifecycle of the planning process with a single entity to process and receive and a system experience from validation to final decision in a uniform operation. The entire management needs to be integrated across the entire solution stack of hardware and software with a web portal based online services, a single point of contact for support and a single set of integrated administration.</i>
	CBC Interview: CBC-2.4	<i>At the core of CBC is an in-depth knowledge of our customers' support services, informed by many years of Council's community services experience. Drawing on this CBC is considering providing a broad range of market-leading and increasingly cloud-based systems, which will help to streamline and automate service delivery from agile front line services to efficient back office operations and offer a complete service-oriented knowledge based ICT platform for customers.</i>
	LBC Interview: LBC-3.3	<i>LBC has been able to successfully implement a shared service and delivered resilient local services for effective knowledge management. LBC today works with Civica in partnership that has enabled the Council to streamline common processes across all departments while maintaining a happy workforce and delivering service excellence.</i>
	MKC Interview: MKC-4.4	<i>Milton Keynes Council has made some significant investments in ICT and has standardised on a range of systems and ICT platforms, perhaps most notably the SAP core financial systems. Previous ICT strategies had outlined a shift towards building on these core systems and this strategy refresh reinforces the knowledge management approach. It is an explicit expectation that the Council will seek to build upon and to further exploit the existing core system platforms e.g. MKi Observatory.</i>

	NBC Interview: NBC-5.3	<i>NBC e-Governance arrangements enable the Council to monitor, co-ordinate and steer ICT investment. An effective ICT governance regime sets policies, priorities and standards for knowledge based integrated system. Service planning processes are robust with a more integrated corporate approach. A new knowledge methodology has been implemented, with facilitated workshops for each service area, to ensure a consistent approach. Part of this methodology involves the engagement of the corporate performance team with service managers to identify SMART targets and measures for their specific areas that, if met, will deliver the required improvements in terms of quality, efficiency and effectiveness for both the Council and its customers. The ICT section, part of Customer Services, is now involved in the service planning process, which makes it easier to ensure that services' ICT needs can be met.</i>
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Table: 7.1 (Summary of the Key Themes for the Case Study Data Analysis)

Source: Quoted from Field Interviews 'Appendix: E-2 (Section-2.1)

- The UK local government was observed enthusiastic for increased stakeholders' participation in sustainable development resulting from the introduction of online planning and e-consultation. However, the local authorities sometime intentionally prevented the application of online services and sometimes they simply could not do so. Sometimes regulation was the reason to process the transformation of conventional services to an electronic one unless the legislation, code of conducts or the law were implemented.
- The planning system reformation towards knowledge society and e-planning were examined as key drivers for changes within local government regulations. The other key drivers of change were among regionalisation, community strategies, and national agenda for modernisation, availability and accessibility of technology, the expectation for rapid delivery of services, global climatic change, low carbon technologies and issues related to waste disposal.

- The organisation culture and time management were also noted down as major tacit knowledge factors. For example, in a few years, most of the local government's staff would be from young people who are fully aware about new technologies. This would support organisational culture change and could become a supporter for the planning system transition towards sustainable development.
- The economic strength was examined as another major tacit knowledge factor to support the innovation and continuous transformation within planning system. The disadvantage of financial forte was considered as major preventer in the continuous improvement to get benefits from digitisation.
- E-government policies were becoming well known and were of growing importance in the UK local government. The innovative ways of communicating and flexible information systems were all gaining momentum for changes in the way local government offered e-services and the way in which they communicated and shared information with key stakeholders.
- The central government wanted public services including planning system to be delivered online through planning portal. This was reviewed as the best value approach for local government services that included a performance indicator. The planning portal was considered as a key feature of revolution in planning system. With respect to local government ICT strategy the e-government policy was a key driver of such transformation to achieve future 'To-Be' state. There was a national agenda for the transformation of local government services based on the accessibility of technology and the associated issues of ICT infrastructure.
- The case study data comparison and benchmark of key features in planning system among five participating local authorities is summarised for constant comparison and bench marking (see Appendix: A-1 to D-1 and Appendix: E-1 (Section: E-1.2) as summarised in the following table (Table 7.2).

BBC	CBC	LBC	MKC	NBC
Planning System Previous 'As-Was' State				
<ul style="list-style-type: none"> ▪ Bureaucratic ▪ Under pressure ▪ Inefficiency ▪ Data errors ▪ Lack of access ▪ Time consuming ▪ Expensive ▪ Lack of ICTs 	<ul style="list-style-type: none"> ▪ Slow process ▪ Time consuming ▪ Inconsistency ▪ Data errors ▪ Lack of follow up ▪ Weak coordination ▪ Job backlog ▪ No follow up 	<ul style="list-style-type: none"> ▪ Lengthy procedures ▪ Ambiguity ▪ Ineffectiveness ▪ Lack of control ▪ Low services ▪ Work pressure ▪ Unequal allocation of resources 	<ul style="list-style-type: none"> ▪ Number of complaints ▪ Lengthy process ▪ Deficient feedback ▪ Lack of monitoring ▪ Inefficient service delivery 	<ul style="list-style-type: none"> ▪ Conventional ▪ Inconsistency in data processing ▪ Inefficient service delivery ▪ Red tape ▪ Lack of control ▪ Missing ICTs
Key Preventive Factors				
<ul style="list-style-type: none"> ▪ The organisational culture ▪ Political issue ▪ Economic challenges ▪ ICT challenges ▪ Stakeholders' resistance ▪ Security challenges ▪ Confidential data loss ▪ Code of Conducts ▪ Lack of Coordination ▪ Lack of motivation 	<ul style="list-style-type: none"> ▪ IT training and literacy ▪ Political will ▪ Financial constraints ▪ Lack of motivation ▪ Resistance to change ▪ Lack of qualified and skilled human resources ▪ Interoperability and multiple service delivery channels ▪ Digital divide ▪ Size of backlog 	<ul style="list-style-type: none"> ▪ The integration of different systems ▪ Linking documents with the CRM, GIS, ERP Systems ▪ Consolidating the scattered data ▪ Lack of motivation ▪ Providing planners with a unified view over their performance ▪ Changing the local government's work culture 	<ul style="list-style-type: none"> ▪ Resistance to change ▪ ICT Infrastructure limitations ▪ Constant changing of rules ▪ Operational costs ▪ KM training and staff motivation ▪ Lack of coordination strategy ▪ No confidence in mobile and cloud computing applications ▪ Technology issues 	<ul style="list-style-type: none"> ▪ Process Transparency ▪ Transforming attitudes into becoming more customer-service oriented ▪ Unreliable internet services ▪ Networking ▪ Large number of stakeholders involvement ▪ Financial cost ▪ Red tape bureaucracy ▪ ICT infrastructure

Key Supportive Factors

<ul style="list-style-type: none"> ▪ Strategic vision ▪ Enhancing local government performance ▪ Consolidation, integration and aggregation of data ▪ Leadership ▪ Paving the road for further inter government projects ▪ Error-free data accessing and forms processing ▪ Public awareness and demand ▪ Planning system strategy for ICT 	<ul style="list-style-type: none"> ▪ ICT networking infrastructure ▪ Placement of online internet based processes ▪ 24/7 data accessibility for planning application submission and tracking progress ▪ Financial strength ▪ Huge public and local government savings ▪ Guidelines, rules and interactive online help and customer support ▪ Leadership, vision 	<ul style="list-style-type: none"> ▪ Political will ▪ Efficient system ▪ Computerised application ▪ Monitoring, control over the project and online help and supports ▪ Formation of a knowledge sharing environment ▪ Establishment of clear and neutral processes ▪ Altering choices available after submission ▪ System integration 	<ul style="list-style-type: none"> ▪ Multi-channel Access to Services ▪ Reducing administrative burden ▪ Raising the efficiency and effectiveness of planning system ▪ Complete transparency ▪ Re-engineering planning services and processes ▪ Developing a case management system ▪ Financial strength 	<ul style="list-style-type: none"> ▪ Providing a quick and easy complaint procedure ▪ Generating useful statistics ▪ Direct delivery of complaints to authorised representative ▪ Strong coordination ▪ Initiating call centre with low cost call fees ▪ Reduced bureaucracy ▪ Visionary leadership
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Emerging Technologies

<ul style="list-style-type: none"> ▪ Introduction of ICT to planning processes and services ▪ Form high-level committee to manage the implementation of the project on frontline ▪ Project scope ▪ Stakeholders ▪ Project tracking 	<ul style="list-style-type: none"> ▪ Building the ICT network infrastructure ▪ Hardware and Software installation ▪ Investigation of the work flow ▪ Operating call Cell ▪ T & D ▪ Developing relevant components 	<ul style="list-style-type: none"> ▪ Approval of web-based application ▪ Enforcement of the sole use of ICT application ▪ Initiation of public computer labs ▪ Training sessions to CRM, GIS, DMS etc. ▪ ICT application ▪ Building the service centres 	<ul style="list-style-type: none"> ▪ Introduce and manage the technical infrastructure ▪ ICT implementation ▪ Establish a platform and a mechanism to networking ▪ System testing ▪ Interactive web based services 	<ul style="list-style-type: none"> ▪ Establishing electronic databases ▪ Defining the system's technical architecture ▪ Design of system ▪ Developing the planning ICT applications ▪ Service centres ▪ Training users ▪ Mobile Apps
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Planning System Transformation

<ul style="list-style-type: none"> ▪ Planning portal ▪ Data classification, access and retention policies ▪ Training of local government staff ▪ Investing in an integrated IT software development ▪ Promoting a knowledge sharing culture ▪ Staff motivation and IT skills 	<ul style="list-style-type: none"> ▪ Application tracking online ▪ ICT integrated knowledge based system development ▪ Investing in training system experts ▪ Allocating financial budget ▪ Defining strategies for staff motivation and effective coordination 	<ul style="list-style-type: none"> ▪ Designing a database technical unit ▪ Network infrastructure for distributed team ▪ Promoting project development task force for sustainable ▪ Enhanced project management policies and innovation in group dynamics ▪ Virtualisation 	<ul style="list-style-type: none"> ▪ 24/7 accessibility ▪ Planning portal integration in system ▪ Embedded GIS and CRM in planning system ▪ Allocating budget for staff training and development ▪ Investing in system innovation and ICT infrastructure ▪ Integration 	<ul style="list-style-type: none"> ▪ Open Data Standards ▪ User-driven business intelligence ▪ Part of the national budget ▪ Virtual-office workers ▪ Web-centric applications ▪ Hybrid on-site / off-site private managed cloud ▪ Best training ▪ Technological integration
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Smart and Sustainable Development

<ul style="list-style-type: none"> ▪ Long lasting viable projects ▪ High levels of satisfaction ▪ Specialised training ▪ Maintaining databases ▪ Personalised ▪ Self-Service Solutions ▪ Return on investment (ROI) ▪ Integrated GIS ▪ Outsourcing ▪ Collaboration 	<ul style="list-style-type: none"> ▪ Low running cost of the system ▪ Outsourcing ▪ Collaboration ▪ Consolidation ▪ Socio-Technology ▪ Awareness and media campaign ▪ Integrated GIS ▪ Compilation ▪ Documentation ▪ Integrated databases ▪ E-consultation ▪ Planning portal ▪ Benefit realisation 	<ul style="list-style-type: none"> ▪ Public-private partnership model ▪ Constant upgrading of planning portal ▪ Experience in the business model formulation and implementation ▪ Personalised Self-Service Solutions ▪ Return on investment (ROI) ▪ Integrated Geographical Information System 	<ul style="list-style-type: none"> ▪ Computing as a utility service always available ▪ Updated information systems ▪ Specialised training ▪ Maintaining databases ▪ Disaster recovery ▪ Integrated GIS ▪ Online web technology ▪ Job opportunities ▪ PESTLE 	<ul style="list-style-type: none"> ▪ Easy-to-access information channels ▪ High levels of satisfaction ▪ Smooth operation of the system ▪ Awareness and media campaign ▪ Updated information systems ▪ Carbon emission ▪ H&S ▪ Risk Assessment ▪ Customer satisfaction
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Proposed Framework Implementation

<ul style="list-style-type: none"> ▪ Start with a pilot project ▪ Timely execution ▪ Business process re-engineering ▪ High level of performance ▪ Knowledge based system ▪ Continuous reformation 	<ul style="list-style-type: none"> ▪ Current system in parallel with new system ▪ Contingency plan: a disaster recovery site ▪ Not to go for a big-bang approach, and sticking to a ramp-up strategy 	<ul style="list-style-type: none"> ▪ Pilot project implementation ▪ KM Ramp-up approach in building the capacity of the planning team ▪ Launching pilot project for KM ▪ Virtual meetings and virtual workspaces 	<ul style="list-style-type: none"> ▪ Setting a clear vision about KM ▪ Securing top management's support ▪ Capacity building of local government ▪ Outsourcing ▪ Parallel system with current one 	<ul style="list-style-type: none"> ▪ Start with a pilot project ▪ Outsourcing ▪ Centralising the design ▪ Decentralising the execution of KM strategy ▪ Contingency planning ▪ System integration
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Table: 7.2 (Comparison of Planning System Reform Strategy among Participating Councils)

Source: Key Features from Mixed Research Methods (Appendix: E-1 'Section: E-1.2')

- The key research points identified and featured from participating councils during fieldwork are shown in the table above (Table-8.2), which are described in the appendix (Appendix E-1: Section E-1.2). The UK local government was observed interested to take advantages from the technological advancement for both efficiency and effectiveness. Global climatic change, low carbon technologies and issues related to waste disposal were likely to bring about reformation in the way the planning systems currently function.
- In order to achieve smart and sustainable development, there was an encouragement of active participation from stakeholders within the local government planning system. This research preliminary study (Ch-6) and main study (Ch-7) presented and set out a number of supportive and preventive knowledge factors to address key issues of stakeholders' participation in an integrated knowledge based planning system. The supportive and preventive knowledge factors for tacit and explicit domains were set out under the title of technological, social, political, legal, environmental and economic elements.

7.1.2 Supportive and Preventive Factors

The central research strategy in the case study was developed to identify key supportive and preventive knowledge factors in order to investigate knowledge management for an integrated knowledge based planning system. It is evident from the fieldwork carried in Part-III (Ch-6, Ch-7 and Ch-8) and final round of survey reported in chapter nine (Ch-9) that a successful planning system with efficient and effective service delivery was capable of managing intangible ideas. It was also noticed that the planning system transformation was examined as a procedure to influence supportive and preventive knowledge factors.

As the planning system is complex in its operation and organisation. This means that the knowledge management in the planning system is actually influenced from explicit and tacit knowledge domains. The case study was carried out to justify the influence of supportive and preventive knowledge factors and their manipulation in planning system reformation towards integrated knowledge based planning system.

This study provided the evidences to classify a prototype of relationships, to explain how planners would be engaged in the sharing, managing and transferring of their expertise within the planning system. To identify patterns of relationships, the main codes of knowledge elements from field study were classified (see Appendix: E 'Section E-1.1' and Table 7.1). The main codes were considered to accumulate sub-codes. The main and sub-codes were categorised in supporters and preventers clusters. This classification of coding was based on the characteristics of knowledge management domains to record the frequency of occurrence. The frequency of occurrence was organised from the use and reappearance of certain terms. The set of relevant and interrelated terms were assembled into supportive and preventive elements, which further clustered into tacit and explicit domains.

The fieldwork has provided explanation of what emerging technologies were in practice and how innovative channel shifts were operating during the planning system. The fieldwork was useful in finding answers to key research questions. This

was helpful to categorise knowledge key factors into separate sets and sorting codes and sub-code perceived by planners as significant for knowledge management in the planning system.

From fieldwork data analysis, it was examined that planners were confronted with several constraints like self-motivation, team co-ordination, lack of training, expensive face to face contacts etc. There was a need to overcome such constraints and to create a successful sender-receiver exchange of expertise for better performance and moving the planning system towards smart and sustainable development. The combination of different teams of expertise were required to support a knowledge creation process, and if due attention was paid to such fact; that would ensure new knowledge creation for enhanced efficiency and effectiveness. To draw up the outcomes from this research study, the evidences were evaluated from ICT strategies and knowledge management policies.

The research results were derived from fieldwork data analysis. The classifications of key knowledge factors were defined into matrix of cluster during the research fieldwork from cross data analysis. The key knowledge supportive and preventive elements were synthesised through the application of emerging technologies and innovation. From the fieldwork the core ideas behind supportive and preventive elements were clustered to realise an integrated knowledge based planning system for sustainable development. This is defined and underlined in the following three point agenda:

- 1. The group of knowledge factors recorded before the start of planning application, which were identified but might continue to put the planning system at risk.*
- 2. Some knowledge factors might occur after planning approval granted, during the actual execution of planning development within socio-technical system.*
- 3. Some knowledge factors might continue to influence the sustainability in future that could encountered in a later stage of project development and completion.*

The first attempt to reveal the knowledge factors in the participating local authorities was related to the busy schedule of interviewing planners as they were performing their assignments in different levels. Surprisingly, the interviewees' tended to answer interview questions about the knowledge factors in context of their council with 'pessimistic responses'. However, some of the questions asked began with '*in your view*' or '*what would you like to say*', some respondents did not describe knowledge management as an essential subject under taken in their jobs. From interviewees' statements the 3Es Model was developed to highlight staff performance in a socio-technical system as graphically illustrated below (Figure 7.1).

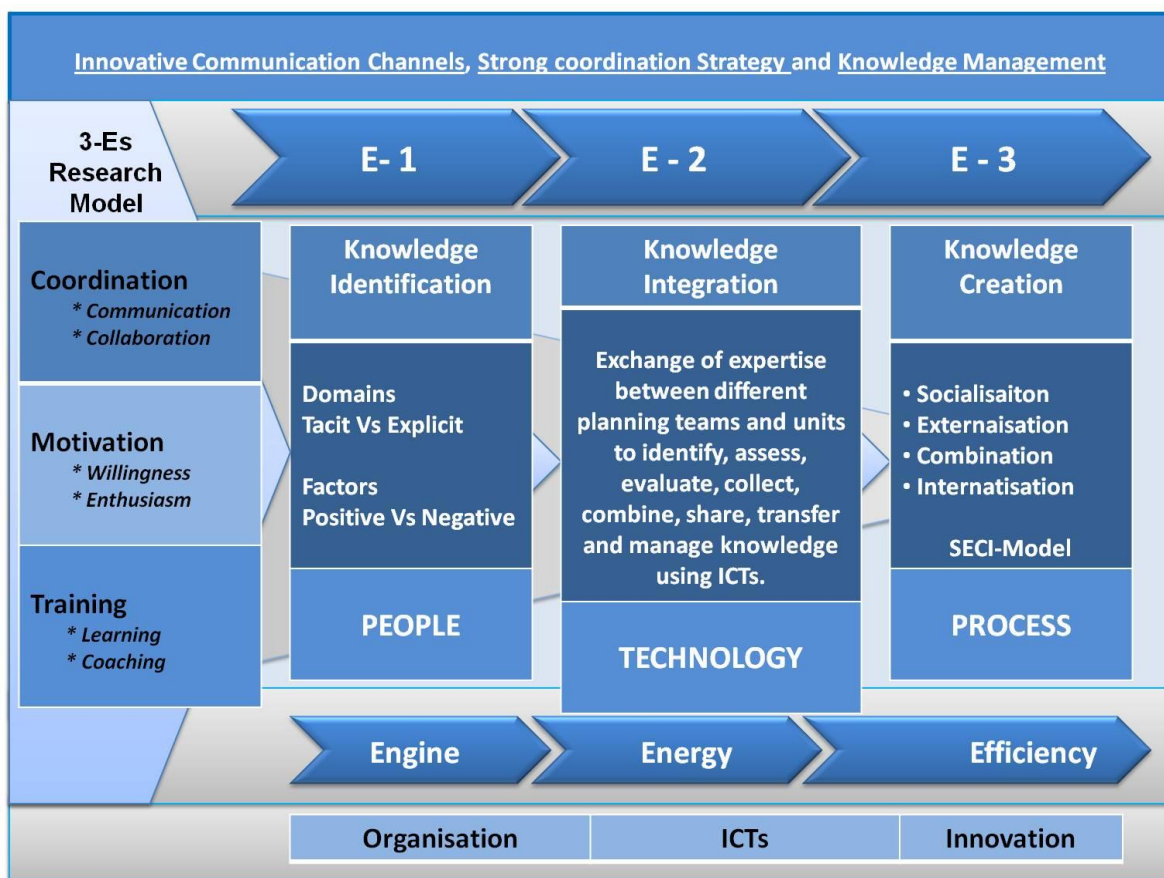


Figure: 7.1 (3Es Model: Engine, Energy and Efficiency for Knowledge based Planning System)

Source: Nasrullah Khilji

The above 3Es Model shows how innovation and technology could contribute to enhance organisational performance by integrating knowledge expertise (engine) with emerging technology (energy) in order to deliver quality planning services (efficiency).

Due to the subjective and domain dependent nature of knowledge, it has been identified that one of the major issues in traditional knowledge management was the complexity of establishing a shared agreement of meaning between people, processes and technology (Shehab et al., 2009). The integration of people expertise and technological advancements for planning processes were considered as key driving forces behind research key propositions i.e. 'innovative communication channels, strong coordination strategy and KM for efficiency and effectiveness in the planning system'.

Many of the participants in this study responded that knowledge management was still treated as a superficial buzzword without real involvement in the planning system. However, the reason behind this was the lack of motivation, coordination, interest or leadership and their vision including the red tape bureaucracy. As a result, it was decided to repeat same questions in some interviews with different level participants within each participating local authority for better data comparison and benchmarking. After comparing the fieldwork findings for cross data analysis, the following cluster of knowledge factors was assembled from mixed methods. From fieldwork (participants' interviews) some of the key statements are summarised in the table below (Table 7.3).

<p>The lack of Integration</p> <p><u>'COORDINATION'</u></p>	<p>An enormous pressure is revealed by interviewees on the lack of motivation, coordination and knowledge sharing among many local government departments and their employees. This indicates that the UK local government is not fully commercial, which means that the planning system is neither unified nor fully integrated to share knowledge. The technological advancements for e-government is theoretically deliberated but it is not up till now fully integrated. Each local authority and their various departments including planning and housing has its own plans which might contradict those of other departments or authorities. It is therefore a fully integrated knowledge based planning system, or, the 100% internet based online e-planning service is not a top priority in the participating local authorities. For example, Central Bedfordshire Council currently receives only 40% planning application through their portal online and most of customer and their agents still use the conventional paper method.</p>
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<p>The lack of Knowledge Sharing</p> <p><u>‘MOTIVATION’</u></p>	<p>The planning process itself stands on clearly defined programme management, but the sharing of knowledge during the application process is still not associated to the overall culture of participating councils. The planning staff is aware that in future it would be important for them to have know how of an integrated knowledge based solution, because the planning decision should be a single approval which offers a distinct and fruitful demand to the applicant for sustainable development. A development planning application is going through key phases to describe the need for clearly defined inter linked stages to keep the planning process under control for both time and financial constraints. The correlation between cross functional planning teams originates the need for efficient transfer of relevant knowledge between different functions involved in the planning process for efficiency and effectiveness.</p>
<p>The lack of Awareness</p> <p><u>‘TRAINING’</u></p>	<p>A knowledge based services are not a priority for local communities (the key beneficiaries of an improved system) for some internal and external challenges. The red tape bureaucracy is one of the major issues, which needs attention in solving socio-economic problems in the immediate future. However, this research finding provides many opportunities for improvement and enhancement in better planning service delivery but there is very less awareness and interest for what is supplied by emerging technological initiatives. This problem may question the significance of these kinds of further research projects. The local government may find it difficult to justify the costs of such project which can lead to put pressure on their funds and direct them towards projects that encourage increasing stakeholders’ involvement.</p>
<p>The Future Strategy</p> <p><u>‘INNOVATION’</u></p>	<p>Participating local authorities could not deny their failure in increasing communities’ awareness about their technological advancements. They accepted inadequate efforts either from the relevant state representatives or from local government in general. In addition, the awareness preventers existed from inside the council as local authority employees sometime are lacking awareness regarding the potential of knowledge management and</p>

	<p>the added value that they can achieve toward efficiency and effectiveness. However, some interviewees answered that the magnitude of this issue has narrowed during the past few years, since the local government has tried to motivate its employees to attend training and awareness events and also extend their knowledge on web based services. This area can be further improved in future once the new lot of public servants are well trained and familiar with e-planning concepts.</p>
<p>The Future Strategy</p> <p><u>'EFFICIENCY'</u></p>	<p>It is also observed that when an application is received, it is important to coordinate and consult with any other relevant departments that may be able to provide the planner with professional advice. This includes departments such as Highways who may assess changes to parking, or Countryside Officer who will ensure no protected species that will be affected by the application going ahead. It may also be necessary to consult with external authorities such as Water or Heritage. The local authorities who are consulted will have access to the plans and drawings and may also choose to visit the site to make an assessment. To address this issue and preventing factor knowledge needs to be identified, integrated and shared with strong coordination strategy.</p>
<p>The Future Strategy</p> <p><u>'REFORMATION'</u></p>	<p>Finally it is observed that there is a twist in the planning system reforms as new changes are not performing satisfactory at an operational level. The senior officials are usually briefed about the operational processes but there are no transparent policies to authorise other officials to do the rest. Some participants believe that the problem began with the lack of clear strategies within administration to channelize knowledge management initiatives in the operational processes of planning system. However, majority of the interviewees have emphasised that their challenging issue is in the implementation of clear rules and regulations to clearly address key supportive and preventive knowledge factors.</p>

Table: 7.3 (Cross Data Analysis for KM Clustered matrix and their Key knowledge factors)

Source: Some key statement summarised from fieldwork (Appendices from C-1 to F-1)

7.1.3 Clustered Matrix for Data Analysis

The classes of supportive and preventive knowledge factors gathered in a clustered matrix represents significant responses from research participants. The fieldwork data analysis provided a documented distinction from collected responses and statements. This matrix also aimed to address this study key objectives, so that the significance of main research propositions could be addressed appropriately. The clustered matrix set up comparisons between different ideas and views of participants. It was perceived role-ordered and conceptually-ordered for a correct data comparison and benchmarking among five participating councils. The cross data analysis and findings about supportive and preventive knowledge factors are presented in the section of appendices (Appendices D-1 to E-1). The following conceptually clustered matrix describes the data evidences (Table 7.4).

Participant	Interview Code	Interviewee	Statement	Sub Codes	Category
Bedford	BBC-1.1	Assistant Director (Planning and Housing)	<i>The resources definition and allocation play a significant role in effective knowledge management practices</i>	SC - 1.1 SC - 1.2 SC - 1.3 SC - 1.4	Explicit Supportive
	BBC-1.2	Head of Planning Policy	<i>The acknowledgement in identification of the people who possess the right knowledge is the fact to allocate the expertise in the planning process</i>	SC – 1.1 SC – 1.2 SC – 1.3 SC – 1.4	Implicit Supportive

Central Bedfordshire	CBC-2.2	Director of Sustainable Communities	<i>Storage and retrieval of planning information, is a possible source to identify expertise, which is retrievable again, is a way to collect, share and combine knowledge</i>	SC - 1.1 SC - 1.2 SC - 1.3 SC - 1.4	Implicit Supportive
	CBC-2.1	Management Support Officer - Service Development Sustainable Communities	<i>The key focus for knowledge management in planning system is the integration of new technologies; the process needs the combination of expertise out of planning units.</i>	SC - 1.1 SC - 1.2 SC - 1.3 SC - 1.4	Explicit Preventive
Luton	LBC-3.1	Policy Monitoring Officer	<i>In planning process it is important to know, whom and where to ask in a more effective way, targeting the right resources the first time to achieve efficiency and effectiveness.</i>	SC - 1.1 SC - 1.2 SC - 1.3 SC - 1.4	Implicit Preventive

	LBC-3.2	Acting Technical Support Manager and Business Process Review Project Manager Development Control	<i>There is no issue to share internet based submitted plans, linked DMS with a broad access. Knowledge existing electronically in codes may be easily shared.</i>	SC - 1.1 SC - 1.2 SC - 1.3 SC - 1.4 SC - 1.5 SC - 1.6	Implicit Preventive
Milton Keynes	MKC-4.1	Planning Enquiry Officer	<i>Planning specific Knowledge to create new knowledge and the understanding between various systems needs an integrated model for defined process. This is though not easy to create an effective use of the existing expertise for KM and sharing.</i>	SC - 1.1 SC - 1.2 SC - 1.3 SC - 1.4	Implicit Supportive
	MKC-4.4	Assistant Director IT and e-Government	<i>The valuation of essential planning knowledge is still in the face to face meetings and close coordination as well as relationship between planners.</i>	SC - 1.1 SC - 1.2 SC - 1.3	Explicit Supportive

Northampton	NBC-5.1	Principal Development Control Officer	<i>To identify how to share knowledge is the capability to classify essential planning knowledge and important know-how to deliver better services. For example, in the future what technology do we need to better design a process, which cover innovation and market needs in long term.</i>	SC - 1.1 SC - 1.2 SC - 1.3 SC - 1.4	Implicit Supportive
	NBC-5.3	Head of Customers, ICT and Cultural Services	<i>In planning it is good to let people work in teams to have an intensive transfer of knowledge. This way they can establish a common approach to knowledge management.</i>	SC - 1.1 SC - 1.2 SC - 1.3	Implicit Supportive

Table: 7.4 (Conceptually Clustered Matrix with Comparison of Responses)

Source: Summary of key ideas / views for cross data analysis (Appendix: D.1 and E.1)

The above clustered matrix format was a simple method, which was based on interviews' data about both tacit and explicit domains of identified knowledge factors and their codes derived during case studies (Table 6.1). The relevant responses were expressed from interviews about key research questions on a tabular column that allowed a comparison between participants' responses and among interviewees' personal opinion. The matrix actually set up comparisons between different kinds of statements from different level of interviewees i.e. *'Head of Planning Policy, Assistant Director of Planning, Planning Enquiry Officer, Head of Customers, ICT and Cultural Services etc.'* The evidences from the case study in chapter six (Ch-6) addressed the research key objectives to rationalise an integrated knowledge based planning system in the UK local government.

The evaluation of case study evidences certified the research results by verifying the participants' perception about key knowledge factors that the researcher identified as the success story behind smart and sustainable development. During the field data collection, the researcher realised that there was a relationship between the purpose and key objectives of this research study and that of identified knowledge factors. The best way to find out what relationships existed in real life between the interviewees' perception about knowledge key factors on one hand and the local government's motives toward perception about an integrated knowledge based planning system on the other hand were synthesised by clustering responses.

Interpretation across the rows gave a profile of each interviewee and provided an initial test of the relationship between responses to research question. An inspection of the attributes to the conceptual matrix above (Table 7.4) provided information to guide follow up analyses. The success factors column of the matrix was dominated by leadership motivation and strong coordination strategy. The major factors related to innovative communication channels, effective coordination strategy and an integrated knowledge management were focused to classify key supportive and preventive factors from participants' points of view. The comparison and benchmarking approach within clustered matrix helped this study for research data analysis and evaluation.

The participating councils were examined for their interest in a more organised approach to define and allocate their resources in order to save time and money. From cross data analysis (Table 7.4) it became clear, how to identify the expertise required for the planning system. This confirms the significance of the issue and leads to the focus on the key supportive and preventive elements of knowledge management (Table 6.1). The dispersed location and geographical distance, different cultures and different communities mean that the planning system needs to be as simple as possible to achieve a sustainable development. The researcher tried to compare the responses from various participants in the clustered matrix to understand how knowledge was identified, shared and managed for improved performance.

In real life these conceptions apply to all irrespectively from the head of planning policy to the planning enquiry officers (who are actually interested to focus on and achieve the set objectives. For-example, to support local authorities' functions and their operations and to increase their efficiency of achievement with reduced cost). Moving to the motives responses, most of the planning project officers preferred to concentrate on customer oriented issues. This could be associated with local development projects being directed mainly to planners as they provide planning support services to applicants and interact directly with stakeholders to achieve smart and sustainable development. This was achieved by looking across columns and rows in the above clustered matrix (Table 7.4).

In addition to the dominance of political influence and leadership as the key success factors, important elements were associated with the research key objectives behind an integrated knowledge based planning system. It was observed that interviewees, who thought that their motives and key objectives were mostly dedicated to local communities, emphasised customer oriented services, online process demand, strong coordination strategy, innovative communication channels, self-motivation, training and commitment as well as local community participation within the planning system to achieve improved performance.

7.2 Grounding a Framework in Empirical Evidence: CMT and PKOT Models

The pragmatic framework 'CMT Model-II' in chapter six (Figure 6.4) emerged as a modified version of an earlier model 'CMT Model' in chapter five (Figure 5.7). The preliminary study in chapter five (Ch-5) reviewed the comparison between the conventional (As-was) and contemporary (As-is) state of the planning system (Figure 5.12). These models were helpful to identify key supportive and preventive knowledge factors based on the fundamental research three principles i.e. coordination, motivation and training. These models provided an essential base to develop the research empirical framework (PKOT Model-I) during main study in chapter six (Figure 6.6). The preliminary study explored the theoretical and conceptual frameworks to obtain a better understanding about key objectives in the main study to identify key supportive and preventive knowledge factors.

It was also observed from data analysis that cross functional team coordination in various planning teams was the essential part of the planning system indicating integration between technological and human resources. The challenging issue to understand here was about how planners identify, manage and share their knowledge and how they package them together in cross functional planning activities for superior individual and team performance. It was also important to identify the relationship between disconnected functional areas, to assess and express how knowledge management occurred between planning teams in several disciplines. From this point of view it was important to understand how knowledge was identified, integrated and re-created and what information management systems were required to promote tacit and explicit knowledge domains within the planning system.

The PKOT Model-I (Figure 6.6) emerged from the case study data in chapter six (Ch.6). This pragmatic model was based on key research propositions: *innovative communication channels, effective coordination strategy and knowledge management*. The PKOT Model-I has been modified after evaluation of evidence to present an adapted version of the original framework with clusters of key supportive and preventive factors to underpin an integrated knowledge based planning system. The PKOT Model-

II emerged from fundamental empirically grounded elements to transform the planning system towards its future state. These four elements: *Planning Process*, *Knowledge Management*, *Organisational Culture* and *Technological Exploitation* influenced by tacit and explicit knowledge domains provided a base to PKOT Model-II as shown below (Figure 7.2).



Figure: 7.2 (PKOT Model-II: Revised and Modified Research Proposed Framework)

Source: Nasrullah Khilji 'adopted from PKOT-Model-I (Figure 6.6)'

The next stage in progressing the pragmatic frameworks was about to review the efforts being undertaken in participating local authorities in South East Midlands. Some local authorities were at a transition period of their planning system besides considering e-governance strategy, which was already initiated from the central government 'the Department of Communities and Local Government'.

7.3 Planning System Reform

The role of knowledge management in the transformation of the planning system significantly depends on the configuration and arrangement of local authorities and their organisational culture and how they share their expertise within organisational structure. In general, the planning system must align the available resources to promote knowledge management policies across diverse planning processes. The planning officer, who was engaged in the planning system is usually confronted with a variety of challenges during the application processes because a single document needed attention, verification and approval from various units. It is important to create an atmosphere that could support the aspiration to build group expertise from singular expertise in the planning system.

The planning system was presumed as a key activity in the local government that required ICT integration for various planning processes in an improved information management. From the case study data analysis an integrated knowledge based planning system framework was developed 'PKOT Model-I' (Figure 6.6), which was later modified into 'PKOT Model-II' (Figure 7.2). The modified proposed model was not only a simple solution of integrating different ICT tools and their applications; rather it contained the serious reformation of tacit versus explicit knowledge between different planning functional areas.

In this study the socio-technical system was mainly focused in context of the planning system transformation. The integration between human and technological resources provided the bridge to achieve the future 'To-Be' state of the planning system by identifying, evaluating, gathering, managing, integrating, and recreating knowledge. The key outcome of this multifaceted method was not a procedural one rather knowledge based innovative planning system. The major challenge to resolve in the case study was how to move forward with new knowledge articulation and how to integrate knowledge based planning system to understand and use a common medium of communication.

From the evaluation of the research study evidences, the success of knowledge management activities was examined as relied on how knowledge was managed, exchanged and integrated. This integration of emerging technologies and creation of new knowledge in planning system for enhanced efficiency and effectiveness was determined as the planning system transformation, which was the key objective to achieve during this explorative research study.

The knowledge management supportive and preventive elements were examined with significant influences on planning system reformation to achieve its future 'To-Be' state. The key challenges about knowledge management were identified among five participating local authorities from case study data analysis. The key internal challenges were mostly related to innovative communication channels, strong coordination strategy and knowledge management applications. Their external issues were typically related to organisational culture, legislations, technological awareness, political will and economics. The use of knowledge management in planning system was anticipated as relevant feature towards smart and sustainable development, which was depended on multifaceted procedures to gain future 'To-Be' state. The planning system transformation from 'As-Is' to 'To-Be' state was assumed as a move towards smart and sustainable development with improved efficiency and effectiveness (Figure 7.3).

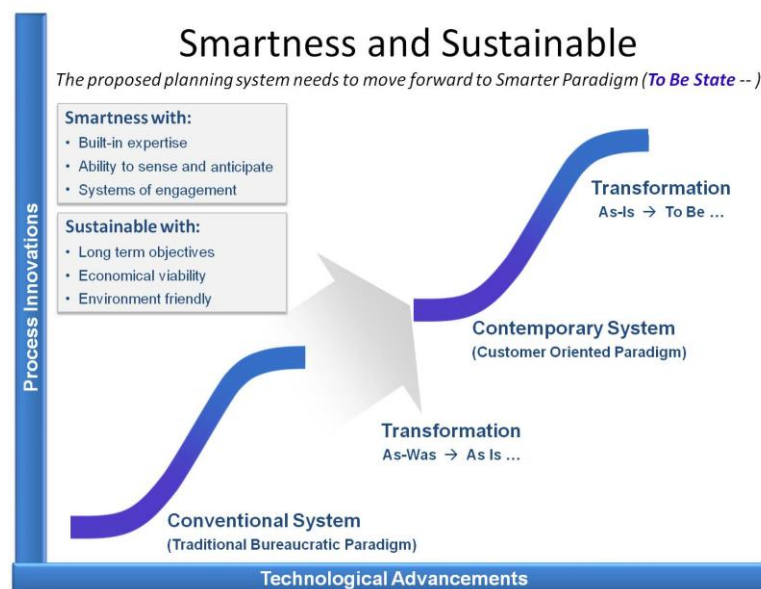


Figure: 7.3 (Research Proposed Framework for Transformation from **As-Is** → **To-Be** State)

Source: Nasrullah Khilji (Adopted from Appendices C-1, D-1 and E-1)

7.4 Addressing the Key Challenges

The planning system transformation framework from 'As-Was' State to 'As-Is' State was proposed during the preliminary study in chapter five (Figure 5.12). This framework was thoroughly examined to propose a socio-technical system framework for enhanced efficiency and effectiveness in chapter six (Figure 6.6). The evaluation of case studies' data shaped the planning system transformation from 'As-Is' to 'To-Be' State. The planning system shift towards its future 'To-Be' state is shown below (Figure 7.4).

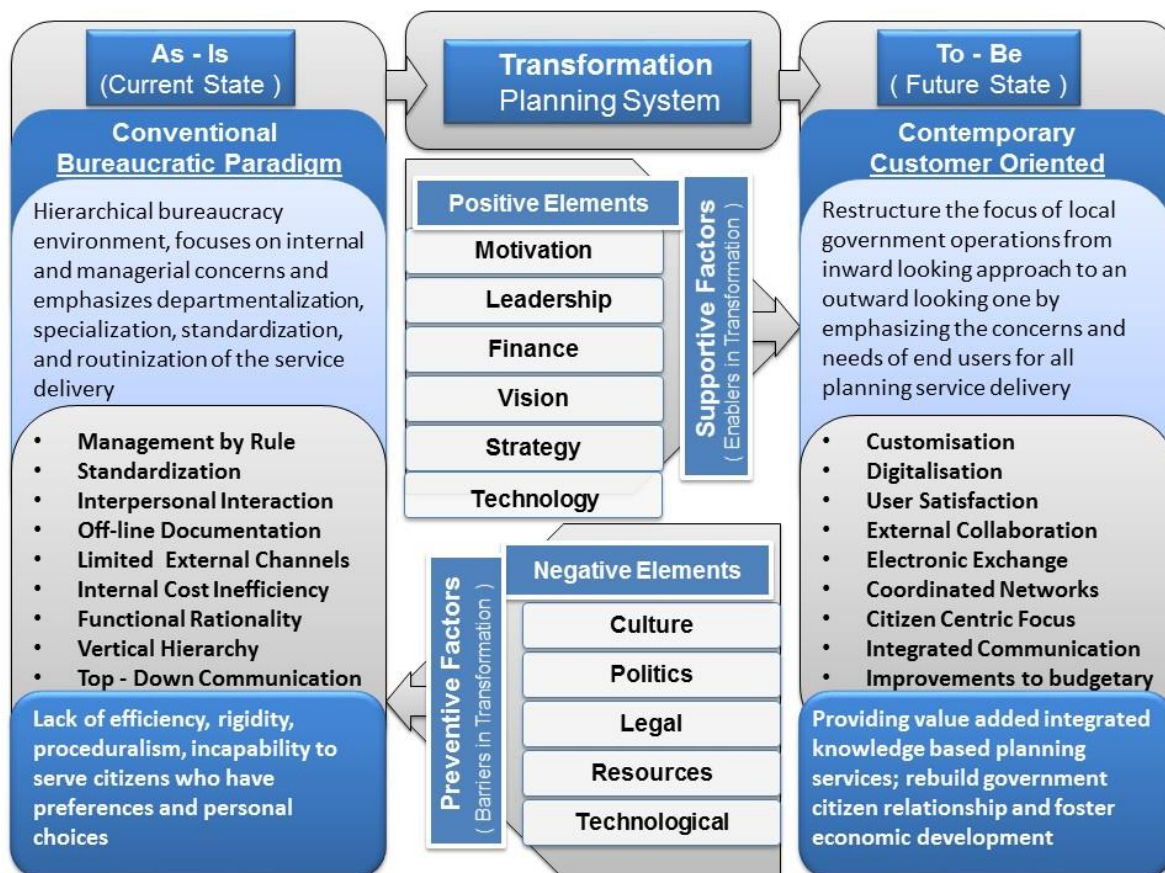


Figure: 7.4 (2B Model: Future State for an Integrated Knowledge Based Planning System)

Source: Nasrullah Khilji (Emerged from Figures: 5.11, 6.4, 7.2 and 7.3)

The evaluation of evidences in this research study demonstrated that there was a lack of ability in the local authorities backup support teams to handle the online transaction and the e-government innovative strategies as a whole. There was also a shortage of channels shift in the local authorities to tackle innovative communication channels at the same time. However, some local authorities were still using traditional procedures

manually without digitisation in the first place while some planning services were also very complex that required a serious attention. The procedures to handle these kinds of the planning system challenges were not usually easy to manage manually without the technological support and suitable capabilities. The summary of key supportive and preventive knowledge factors in the planning system transformation towards smart and sustainable development with tacit and explicit domains is discussed below. However, technology was considered as both supporter (as a tool) if improve operation and preventer (as a system) if not fit for purpose.

7.4.1 Major Supportive Factors

7.4.1.1 Motivation

According to the field interviews' statements, motivation was the definitive driving force in the successful implementation of an integrated knowledge based planning system in particular and the e-government programme in general within the UK local government .

7.4.1.2 Leadership

Leadership was perceived by some interviewees as a very strong support, which was considered essential for the success of the current transition state to the future state. Most of the participating councils' officials agree with this factor, as they consider that effective leadership and strong political will is always essential to influence the planning system reforms.

7.4.1.3 Vision

According to research participants' statements, a shift toward smartness and sustainability required a profound, clear and joint vision by local government leaders, political parties, the private sector, civil institutions and citizens who expected to benefit from the planning system transformation. In addition, it was essential that the local government vision was formulated in cooperation of key stakeholders.

7.4.1.4 Strategy

Strategy was identified as a supportive element from most of the research participants' statements. It was believed that effective strategy to implement an integrated knowledge based planning system was always supportive. The strong coordination strategy was suggested as a supportive factor for success (and lack of it for failure) towards sustainable development to a great extent. The reason was that effective strategy was based on comprehending the current reality and its problems, so as not to let new projects lead to the old problems in future developments.

7.4.1.5 Finance

The availability and strength of financial resources for the e-government projects in the UK local government was identified as a major factor in the planning system reform. Sufficient funding to achieve the future state was certainly an incentive, especially when local government was under the pressure for improved efficiency because of a major cost cut and financial constraints due to recession.

7.4.2 Major Preventive Factors

7.4.2.1 Cultural Issues

The organisational cultural issue was the major preventer in the UK local government planning transformation and e-government strategy. This preventer is a potential problem in the implementation of a fully integrated knowledge based planning system. This needs to be considered in the whole initiative in relation to corporate culture. The first cultural barrier was the resistance to change from both service providers and service recipients. Both of them were not usually used to an integrated knowledge based planning system and emerging web based processes.

7.4.2.2 Political Hurdles

Sets of political hurdles were apparent from the fieldwork interviews which identifying major political influences in the introduction, development and implementation of knowledge based planning system. These were the kind of barriers that could affect directly a particular phase of technological integration or online e-planning system at any particular stage of reformation. This group of challenges act as a barriers through of interplay of political activity and its impact on decision making.

7.4.2.3 Legislative Changes

In UK local government, legislation was not something that could be easily ignored; it took many years to change a law or to implement a new change. It takes much time for the new law to be thoroughly examined before approval. The changes in regulation which result usually have to be made ready for practice, be passed through council meetings and then to be approved for implementation.

7.4.2.4 Resource Constraints

The political, social and economic benefits were required to be clearly understood with clearer political commitment and policies in place for an integrated knowledge based planning system. However, the resource constraints were also among key challenges that put barriers to initiate certain knowledge based activities. It was a preventive factor as it was not possible that the required or desired investment was available for such initiative. In the time of recession, the local governments might simply lack the financial capacity to start technological integration and e-government, despite of the potential benefits this would bring for sustainable development.

7.4.2.5 Technological Barriers

From the technological infrastructure perspective, there were some challenges that affected the development of online e-planning service projects. Examples of these challenges included the lack of security systems for the information system, the need for high security constraints and security levels, hosting availability, and the need for multiple servers for the web gateway. There was also a problem with the absence of unified standards for the mechanisation of governmental authorities, the weak governmental enterprises technology readiness and the inadequate computerisation of local communities. Moreover, when the IT was available, the government agencies used it for automating the current systems in order to achieve better solutions with improved efficiency and effectiveness, rather than using it as an opportunity for business process improvement. Technology on hand is enabler / supporter as an emerging tool while on the other hand it is preventive factors if it is not fir for purpose.

7.5 Implementation of Proposed Framework

From the above discussion about key identified supportive and preventive knowledge factors, the proposed research frameworks: 'PKOT Model-I' (Figure 6.6) and 'PKOT Model-II' (Figure 7.2) and '2B Model' (Figure 7.4), the researcher identified a set of main supportive and preventive factors to take into consideration for developing and proposing an integrated knowledge based planning system. However, the five participating local authorities have different circumstances and usually encounter unpredictable and uncontrollable situations at various stages of their planning system due to their individual geographic and demographic environments. The researcher in this study described the course of action through which an integrated knowledge based planning system could be applied from the initial planning inquiry until the final decision for project approval.

The proposed research frameworks highlighted the diverse supportive and preventive knowledge factors within tacit and explicit domains and the strategies of emerging technologies. These models also suggested various actions and procedures that were believed to enhance the efficiency and effectiveness of the planning system towards its future 'To-Be' state, which was graphically illustrated in the '2B-Model' (Figure 8.4).

The initiative for an integrated knowledge based planning system in the UK local government originated from the need to address research challenges by overcoming preventive elements. Such challenges include the multifaceted structure of the local government planning system, expensive and complex procedures for all stakeholders, unsatisfactory administrative performance, inflexible process techniques, bureaucratic red tape, issues of motivation, lack of coordination and increased need for training.

From the evaluation of the research study evidences, it was realised how to overcome the identified issues including the bureaucratic structure of the local government. To tackle such issues suggests the application of innovations and knowledge based policies. The planning portal for e-services to achieve a significant benefit such as online 24x7 planning system was considered as one of the solutions.

To get assistance for the geographically dispersed communities from an integrated planning system required an embedded GIS. An appropriate resolution to the identified barriers could also be achieved by clarity of procedures to enhanced efficiency and effectiveness. In addition to increasing trust, the financial strength, the technical support and business process review were among other key identified resolutions. There were various benefits which could be achieved but the UK local authorities were not sufficiently applying and practicing processes which could help them to implement an integrated knowledge based planning system.

The research outcomes suggested that the local government needed to pay attention towards their staff motivation and their executive leadership vision as the ultimate driving forces for the implementation of an integrated knowledge based planning system. In order to achieve this, the research study results, the identified supportive and preventive entities need to be tackled to ensure a long term commitment by enthusiastic leadership to provide financial strength and solid strategies with visionary approach.

The participating councils agreed to consider 'To-be (2B) model of a knowledge based planning system in order to enhance their performance. An application of this model was tested on a sample of the local population in a small geographic area of Central Bedfordshire Council by presenting the idea to key stakeholders for verification and implementation. This required effective coordination strategy to initiate the project for several reasons (see Appendices for the planning front 'To-Be' model (Section F-1.4)).

To further validate the planning system '2B Model', this was presented on the online forum of the local government 'www.idea.gov.uk' to get views from diverse planning community within the local government. The online forums were helpful to gather the views from experts to analyse the users' experience about key benefits. The other reason to use online forum was to find out about their ICTs strategy for an integrated knowledge based planning system (see Appendix: C-1 (Section: C-1.1)). The planning advisory service forum was also used to collect opinions from the online planning knowledge hub 'www.pas.gov.uk' (see appendix-C).

From the '2B-Model' validation and experts' feedback, a need was identified how to discover a resourceful way to carry out transition from 'As-Is' state to 'To-Be' state. The participating councils and some online respondents acknowledged that ICTs always played an imperative role in providing innovative communication channels and continuous improvement in the e-planning services.

It was believed that outsourcing could be a good strategy to build databases for framework implementation with the intention of bridging the gap to the future state of the planning system. The partnerships with major ICT corporations might be the required mechanism of appropriate web interfaces and data security procedures.

The increased interaction between local communities and planning officers would have led to increased trust, enhanced transparency and empowered general public to raise their voice for sustainable development. The pressure and work burden could be reduced among the local government employees, as soon citizens preferred to use the e-planning channels and would use planning portals to save hours of discrete work. An integrated knowledge based planning system suggested a comprehensive database for the council within their specific needs, so that knowledge would be properly managed.

After implementing an integrated database, it is anticipated that the transactions would be further improved, which would be conducted between the council and citizens round the clock. The integrated online cloud computing database would be then embedded within the planning system so that interactive e-services were easily available through different levels of the local government and also through different planning system functions in order to achieve and make available one stop services.

7.6 Chapter Summary

This chapter, presented a cross data analysis from the case studies across five participating local authorities to deliver key research evaluation and outcome. The key findings are obtained by looking at the critical factors of supportive and preventive knowledge factors. The evaluation of fieldwork evidence is presented which are collected from fieldwork in different phases. The cross data analysis is discussed to validate research pragmatic models. The empirical models validation process is discussed along with the evaluation of fieldwork evidences. The fieldwork data analysis is reported to present a proposed framework for the future 'To-Be' state of the planning system. This provides a logical influences for emerging strategies as described in the succeeding chapter (Ch-8).

PART – IV

Outcome

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CHAPTER 8**EMERGING STRATEGIES:
TOWARDS A KM-CENTRED
REFORM OF PLANNING**

In this chapter (Ch-8), the researcher presents a general evaluation about the overall research findings. This is enriched by the final round survey also reported in this chapter to assess the pragmatic frameworks developed from the fieldwork carried out in the part-III (Ch-5, Ch-6 and Ch-7). The outcome from the final survey is discussed in this chapter to justify the contribution of this study in developing an integrated knowledge based planning system towards smart and sustainable development. The critical review made in this chapter sheds light on the evaluation of evidences collected during the literature review and fieldwork. The research strategic approach is highlighted at the end of chapter in which the identified research gap is addressed in theory and practice.

8.1 Emerging Strategies: Towards a KM-Centred Reform of Planning

This research study was conducted to examine the need for an integrated knowledge based planning system in the UK local government. This study makes a contribution to bridging the research identified gap to transform the planning system from 'As-Is' state to its future 'To-Be' state towards smart and sustainable development. In this chapter the overall problem area is addressed and the key research objectives are responded to in such a way as to rationalise an integrated knowledge based planning system.

This study documented the role of ICT strategy to explore how the UK local government encourage citizens to get involved in the planning system. In this study the researcher recognised that the emerging technology by itself is one of the challenging issues. The Head of Planning Services and Information Management at Luton Borough Council mentioned that Luton Borough Council encountered various technological issues including the IT infrastructure during the implementation of online services and the limits to technical innovation in some units. But overall, the joint venture with Civica for their ICT services has enhanced the level of technological advancement at Luton Borough Council. This council now has complete databases, online GIS, ease of access to data and knowledge sharing and exchange. The council planning staff can now make best out of ICT, to deliver best performance to address the on-going technology related problems (LBC, 2012).

The UK central government has published its local plan making regulations and neighbourhood development regulations in 2012 (Planning Reform, 2013). The new local plan regulations included some changes, which have necessitated a revision of the planning system to facilitate stakeholders' participation in the planning system. The participating local authorities described how and when they would like to get the citizen involved in the planning system, whether they want to influence the preparation of the local development plan, get involved in planning system at a neighbourhood level or respond to a planning application to ensure sustainability (Planning Reform, 2013).

The participating local authorities talked about the planning system, based on local plans, where people live, work, go to school, shop and enjoy open space whilst protecting the environment and commuting without increasing carbon emissions. It was observed from data collected that an integrated knowledge based planning system is not easy to achieve in intensively urban area such as Bedford, Luton and Northampton without the involvement of local communities. It was noted that the early involvement of citizens in the planning system before reaching to a significant decision would influence the sustainability of development. The key case study participants responded confidently to the idea of transforming their planning system for sustainable development as a key priority.

From fieldwork, the researcher discovered that a re-engineered socio-technical system could be the eventual alternative to address the research challenges identified, by combining human expertise with technological innovations to attain knowledge based planning system. The general discussion covers some themes about the key knowledge elements collected from fieldwork such as innovation, coordination, motivation, training and learning, infrastructure, process complexity, leadership style, financial strength, council vision, conflicting priorities of local authorities, corporate culture, bureaucratic planning structure, lack of online applications etc. The lack of readiness of councils and staff collaboration difficulties were among the major identified preventive factors in the transforming the planning system towards its future 'To-Be' state (Appendix: D-1 & E-1).

The final survey was carried out to evaluate and justify the empirical frameworks using the participants' review, opinions and feedback. This survey was conducted to collect views of senior level management in order to evaluate the research outcomes to achieve the framework validation and justification (Appendix: F-1). The final round of survey is described in the following section, which includes the summary of responses from key participants' interviews as presented in the 'section 8.2.2' below.

8.2 Final Survey Report:

‘An Interim Reflection on Progress towards Emergent Strategies’

The final survey was carried out during the last phase of this study through unstructured interviews and a structured questionnaire in order to set out a cross data validation. This survey was conducted to justify the planning system transformation for enhanced efficiency and effectiveness. The intention behind the final survey was to examine how the proposed planning system transformation framework would be incorporated to realise better opportunities towards enhanced efficiency and effectiveness for smart and sustainable development.

The respondent statements in the final survey indicated that the local authorities maintain a record of failing to decide planning applications for major development on time or where a significant proportion of the authority’s decisions have been challenged successfully at appeal. This survey provided evidence on the decision making timeframe to assess how to achieve better chances of being ‘right first time’. This can ensure appropriate levels of growth and give greater certainty to local communities for sustainable development (Appendix: F-1, Section: F-1.1 and F-1.2).

This final survey report indeed reflected on the respondents’ views for assessing local planning authority performance in context of ICT and KM, to identify major thresholds that might be used for any departments or task units. It was also intended to categorize the key factors that would directly or indirectly influence the planning system performance (including the procedures that would apply where an application is submitted and the basis on which a decision would be imposed or lifted). Views were also collected on related issues in order to enhance the application processes and decision making timeframe.

8.2.1 Overview of Survey: *Interviews and Questionnaire*

Initially it was planned to conduct 8 face to face scheduled interviews but later only 6 interviews were conducted. The Interview response success rate was satisfactory, which was 75% of the initial planned sessions. The response to the

structured questionnaire was not very high, Some 30 members within five local authorities were contacted. However, only 16 responses were received from the distributed questionnaire which is 53% of the total responses. In total 25 open questions were included in the unstructured interview and some 29 closed questions were framed in the structured questionnaire (Appendix: F-1, Section: F-1.1, F-1.2 and F-1.2.1). In spite of the shortfall on responses the richness and variety of view registered confirms the value of the final survey and suggests positively indicative results.

From the questionnaire data analysis the researcher examined the ICTs and KM trends across all five participating local authorities' in reference to their planning system transformation. For each of the categories and dimensions of KM earlier identified in the research frameworks, the researcher looked at within councils comparisons coupled with departmental differences. The researcher decided to conduct the comparison of statements gathered for cross data analysis to make sure a high quality of data validation. The reason for questionnaire data analysis was to look beyond early impressions and to collect evidence through different points of views. The final questionnaire data analysis report reflected on the respondents' views for assessing local planning authority performance in context of ICT and KM to identify major thresholds that might be used for any designations or sub units (see Appendix: F-1 and Section: F-1.2.1 for questionnaire data analysis).

An overview of the interview / questionnaire process is presented below:

1. Many interviewee responses raised broader issues than those covered by the structured online questionnaire. The rationale for the unstructured open questions focused particularly on the ICT strategy and the KM policies in the local government. The implications of measures to examine the planning system transformation towards its future 'To-Be' state was specifically determined.
2. Some responses were not clear i.e. 'yes' or 'no' replies with very limited description but instead these offered further questions or raised wider issues for more discussion. The answers were classified separately in the summary of

responses to each question (summarised below in section 8.2.2). Furthermore, responses to some questions raised issues about matters covered elsewhere during the earlier fieldwork and their provided links and documents.

3. Many responses commented on how the frameworks developed from the research relate to the council planning system and in particular the steps which the local government has taken to give planners and communities more control over the way that development takes place in their region.
4. It was noted from the participants' responses that local government would prefer to work closely with local partners and associations for customised service delivery. It was observed that the local government would like to consider the use of the Planning Advisory Service (PAS) to encourage their local partners and associates to receive greater support on suitable local development.
5. The respondents also discussed how they have taken care to ensure that local communities could continue to have participation for better development in order to deliver appropriate and customer oriented services.
6. A number of responses pointed to the potential reasons for slower decisions being made on applications. A general view being that it lay in a combination of a perceived move away from a focus on the speed of performance by the local government towards a deeper engagement with the complexity of actual cases and the need to engage with stakeholders. It was also found that more time was indeed required to negotiate for positive outcomes on some planning plans.
7. The participants did accept that there could be various reasons for the sluggish move in performance against the set standard to determine the planning applications for sustainable development.
8. Interview participants also mentioned that there was a positive progress towards integrating ICT strategy and KM policies in recent years to ensure sufficient priorities were considered to deal with major planning applications on time. They also stated that an increasing transparency is achieved where more time is genuinely needed to deal with complex proposals and mega programmes.

8.2.2 Interview Statements

Having carried out a number of data gathering exercises, this final survey provided invaluable insights about participating councils' Knowledge Management strategies and practices. The conducted interviews were recorded but key notes were also taken for data analysis to prepare the report for the research results validation. Each interview was coded (For-example '*FS-1-01 means final survey first interview*'). The final round of survey was also helpful to evaluate the participants' views about their emerging ICT strategies and KM policies for enhanced efficiency and effectiveness towards sustainable development. The following analysis is drawn from interviewee statements to validate the proposed pragmatic models in this research study (see Appendix: F-1, Section: F-1.1 and F-1.2).

Question 1:

What is your current job title and for how long have you held this position?

The majority of respondents were among senior and middle level management with an average 22 years' experience within local government. Many of them were holding previous experience in key local government positions i.e. Head of ICT, CIO, Senior IT and e-government Officer, Senior Planning Officer etc. Being senior officers, the majority of them had strategic responsibilities for information as asset, while holding a position to look after both operational and functional responsibilities. Many of them were holding the key responsibilities to look into the strategic direction of their council and to maintain the overall e-government and procurements policies to reduce cost to work out for improved and better coordination strategy.

Question 2:

What are your key job responsibilities in your current post and what were your previous job experiences?

Most of the respondents were active and senior members in their council. Many of them were particularly experienced in planning and development, strategic planning, business transformation, ICT strategies, procurement management, service and project turnaround, operational service delivery, project management optimising resource utilisation, managing performance, customer care, MIS, DBMS, stakeholder engagement and supplier management. The following tables show interviews code and the participants' statements about their current job status.

Question 3:

How do you describe the term knowledge management (KM) in the context of an improved planning system?

The statements from final survey interviews indicate that respondents generally have a relatively high level of awareness of what comprises knowledge management in the context of an improved planning system within their council. The responses show that awareness of knowledge management in the UK local government is still developing. Interestingly, the majority responses indicated that customised services, organisational culture, collaboration and core competences are the key terms that designate knowledge management within their local council. There was also high degree of confirmation indicating that motivation, communication, processes and learning are part of descriptions of knowledge management. Knowledge management terms i.e. 'knowledge sharing', 'knowledge transfer' and 'knowledge identification' and 'knowledge creation' are also revealed as expressions that have resonance amongst the majority of respondents. At the other end of the scale those terms that refer to supporting knowledge management, 'tools and techniques' and 'skills and competences' are regarded as knowledge management terms in the local government.

Question 4:

Are staff trained and mentored in information and knowledge skills at your Council?

The responses from participants' show that training and mentoring are always considered important and valuable but these are usually provided in a professional silos or specific skills that are very much around the team specific skills and requirements. Many of them responded that they would like to be committed to making sure that all staff members receive the right training and development to help them deliver excellent services to the local communities. Many respondents were suggesting the need for more staff training while some stated that satisfactory training and mentoring practices are already in place.

Question 5:

Does the Council have specific posts and roles dedicated to acquiring, managing and coordinating knowledge?

This question was answered in Yes and No but the majority mentioned that their council was holding or has the intention to have designated position for KM. Some of them responded that there was a role to look into the customer needs and to look for more

operational activities and data files. These roles are dedicated to try to understanding the role assigned responsibilities i.e. MOSAIC Data to understand what to do from the data gathered from customers. The dedicated roles for KM supposed to provide an internationally recognised, high performing knowledge and intelligence service including research, statistics and know-how. The majority responded that their council holds a dedicated role while some indicated that their council has an intention for a dedicated position in future.

Question 6:

Do the Council's leaders reinforce the importance of identifying and sharing, creating, managing, and integrating knowledge in your Council?

Most of the respondents said yes to this question, because they believed that there is a lot of conversation among their senior level management around the need for KM and how best to achieve the knowledge management practices to better understand customer needs for quality services delivery. Many responses are in favour of their leadership approach towards KM. They also stated that although it is challenging to identify the assumption and how to address them in future as KM increasingly is becoming necessary to generate and utilise information / knowledge to obtain a competitive advantage and to functional efficiently. Many participants stated that there is a need for more efforts while some mentioned that they were not satisfied from senior leaders' current strategy towards reinforcing the importance of KM.

Question 7:

Does the Council's culture encourage the exchange of knowledge and learning from day to day activities and development projects?

The majority of the responses were positive about this question as many of the respondents said 'yes' with some observations. They considered their organisational culture as a challenging factor but once genuine lessons are learnt they could be applied and incorporated into improved delivery of services. They also understand that knowledge is actually derived from an individual's use of information combined with that person's experiences. This combination is what is considered as an individual knowledge valuable for the organisation and community at large. The majority of responses indicated that the council's culture encourages the sharing of knowledge among their employees, but some still wanted their council to do more to support KM. Respondents also believed that the

council's ICT strategy supports KM practices by facilitating quick searching, access to and retrieval of information. This in turn improved the cooperation and communication between members of their council in order to support and encourage exchange of knowledge for sustainable development.

Question 8:

Do job descriptions and performance assessment processes acknowledge the importance of identifying, sharing, creating, managing, and integrating knowledge?

This question considered how satisfactorily the job description and performance assessment processes are in place to recognise the value and the importance of identifying, sharing, transferring, integrating and managing knowledge within the local councils. Some of the responses are supportive to the asked question, while others responded that there is a serious need to address this issue in order to be able to deliver improved and quality public services for sustainable development.

Question 9:

Within your Council are there examples of matrix or partnership working that deliberately draw on diverse knowledge?

The majority of the responses were positive about this question as many of the respondents said 'yes' with some observations. They considered their organisational culture as a challenging factor but once genuine lessons are learnt, these could be applied and incorporated for improved delivery of services.

Question 10:

Does your Council measure and audit knowledge management? If yes how is this done?

The majority of the respondents replied that there is a need at their council for a strategic approach to evaluate how their council measures and audits knowledge for enhancing efficiency and effectiveness as shown in the following statements.

Question 11:

Does your Council have a clear view of its key knowledge and intellectual assets?

The majority of the participants quoted in response to this question that at their council employees are regarded as a valuable asset to share and transfer their expertise. Human capital was acknowledged as a primary focus at their council. For them it became a trend

that witnessed increased consideration of intellectual capital rather than a focus solely on human capital. Intellectual capital could be broadly conceptualised as the sum of all knowledge a local government can leverage in the process of conducting the planning system to gain competitive advantage. More specifically, intellectual capital might comprise at least three forms of capital: 'human, social, and organisational'.

Question 12:

Does the Council have a firm and clear knowledge management strategy in operation to mobilize its key knowledge and intellectual assets?

From the recorded responses one can conclude that the local council would like to have a paperless office but there are still piles of papers in their offices that need to be digitised for. It was discovered during this final survey that very recently local government has realised that once they work electronically they can work in smaller spaces with fewer people and that this will change the current nature of work. The majority of responses confirmed that they are working on a number of areas for innovations to be able to deliver quality services within minimum available resources. Some respondents also declared that there is a need for a firm and clear KM strategy in future in order to be able to mobilize the council expertise.

Question 13:

Has the Council implemented systematic processes for gathering, organising, indexing and making accessible its knowledge assets both as content and people?

From the narration of recorded interviews, it is discovered that the majority of respondents believed that knowledge emerges when the information is related back to a concrete situation, in order to establish explanations and lessons learnt for effective decisions. The majority stated that many local development projects retain much raw data but with less information and little knowledge. Hence very little use is made of the original data for decision making. In order to implement systematic processes for gathering knowledge assets it is important to get the right method for the task at hand, consider if it is: feasible, appropriate, valid, reliable, relevant, sensitive, cost-effective and timely. The majority agreed that their council needs to consider this because the firm and clear KM practices can offer advantages that can lead to more informed decision making, streamlined processes, reduced duplication, more innovation, advanced data integrity and greater cooperation within the council operational and functional activities.

Question 14:

Does the Council convert its working experience into improved planning processes and services systematically for sustainable development?

Many responses show that managing people effectively within local government is a skill that requires constant planning and development. The lesson learnt from projects is considered as the key responsibility of an officer for council information management to improve performance. This can be achieved by ensuring that services have access to accurate, relevant and up-to-date information. This can also ensure compliance with relevant legislation surrounding data held electronically as well as to ensure the council's website contains current and accurate information. The majority of responses confirmed that the local government has already put some efforts to identify posts, training and staff-turnover as key criteria to consider in regard of KM. It is recognized that employees' past experiences, skills and qualifications are valuable to the council in order to put their staff in the right position.

Question 15:

Do tools exist in the Council that have further potential for an integrated knowledge based planning system?

The final survey participants answered this question with a clear understanding of their ICT strategy towards an integrated knowledge based planning system. The ICT tools that are in use also depend on the efficiency of the transformation process applied by the organization to produce its outputs and services, on worker motivation, and on cooperation. The need for further systems' integration can be helpful for efficiency of the transformation process, which is increased by finding more rational ways to organize and perform the work and by deciding how to make the best use of available technology, resources, and personnel. The majority of respondents stated they can see greater demand for consolidation in future because when an organisation considers employing a specific KM strategy, it is necessary to do an analysis of the organisation and its current systems in order to determine, which tool would be the most effective in facilitating the council's needs in the long term to achieve success.

Question 16:

Has the Council employed any informal mechanisms to gather and mobilise its tacit knowledge, for example, after action reviews, communities, story-telling, master classes, networking events?

The view expressed by respondents is that knowledge management in local government is dependent on the understanding and management of staff learning, Council memory, knowledge sharing, knowledge creation, and organizational culture are mentioned in many replies and that an innovative approach is an urgent challenge to the local authorities in order to look forward to develop a long-term relationship with key partners. The provision of managed and outsourced services in areas where the council has specialist expertise is fundamental to their KM strategy and they would like to support partnerships that will become a centre of excellence in local service delivery for identifying, sharing and managing knowledge.

Question 17:

Do you think there is a need for an integrated knowledge based planning system for improved efficiency and effectiveness in your Council?

Many of the responses were in favour of an integrated knowledge based planning system for improved efficiency and effectiveness. The majority believed that there is a need for a focused study on an integrated knowledge based planning system for improved performance. The local councils follow structured processes but their network structure still needs to be more suitable to facilitate knowledge based systems. Most of the answers stated that an integrated knowledge based planning system (or any other consolidated activities with the networked structure) would provide adaptability, which allows for a more rapid response to changes to move towards smart and sustainable development. The survey discovered that there is a need to deliver a result, which can provide a better system integration for improved community services in order to fulfil customer services requirements. Integration is an effective work process for key service delivery in the UK local government.

Question 18:

With regards to its vision, has any part of the Council articulated how improved Council performance and value will be derived from managing existing knowledge?

The majority of the statements about this question were mixed. Many of the respondents believed that in their council the key strategists, policy makers and the public services will benefit from a reliable source of information to facilitate decision-making at the operational, strategic and policy levels. This will provide cost savings across the organisations in time and effort to locate information that allows users to map information and use data in their own time. It means the vision from top level management is essential in order to articulate

the knowledge for improved performance. It is clear from the participants' personal experiences that the senior management within the key departments of their council have the potential to successfully tackle the challenge. But, they stated that knowledge management is still a new area, which needs more time for the acceptance of the concept by the council top leadership as quoted in their statements below.

Question 19:

Please identify the key **supportive and preventive** knowledge elements that enhance or put off the development and implementation of an integrated knowledge based planning system in the UK local government?

The research model and its identified supportive and preventive elements were clearly validated from the statements of participants. The major factors quoted are similar to the key knowledge elements identified during the earlier fieldwork. The majority of responses were about the organisational culture, leadership vision, technological strategy, functional process, financial, political, environmental, social issues as shown in the following statements.

Question 20:

Have any comprehensive area assessment inspections or reviews identified any areas for improvement where you now think that managing knowledge would make the difference?

The majority of the respondents were agreed that it might be useful to develop a comprehensive area assessment inspection in order to manage knowledge that would make the difference and would improve the delivery of services. The majority stated that the best way to get senior managers to approve a business case is to find out how their senior management would prefer to receive updates and news for better action. From the participants' responses, it is clear that KM for improved services delivery requires explicit expertise.

Question 21:

Do you see practical improvement in the planning system operational efficiency and functional effectiveness because of knowledge management?

The majority of the responses were positive about this question as many of the respondents said 'yes' with some personal experiences. They considered their council has already taken some practical steps to enhance the planning system operational efficiency

and their functional effectiveness from knowledge based applications. The majority of the responses indicated that currently KM is at an embryonic stage that needs to be further developed to see more practical improvement in future. Most of the participants believed that knowledge management systems need to be further developed in order to become capable to integrate and support a wide range of activities.

Question 22:

Please offer your comments on the research process and empirical modelling ‘CMT MODEL’ and ‘PKOT-MODEL’ in your own words?

Many of the respondents believed that the research models can provide help in the lessons to learn as these models would provide a way to enter into a new area of research with novel findings. The majority of them stated that this is a conceptual discovery, which is at an early stage at their council because they are just entering into the debate about the KM within their council. Most of them mentioned that they would be very much interested to see how this research opens new opportunities for more tangible research approaches that could also be applied for other services within the local government i.e. health, education, transportation etc.

Question 23:

What is the current ‘As-Is’ state of planning system in reference to KM in your Council?

The responses show that there is no one set representation of the current planning system to provide a clear mechanistic or static method. It is in fact about analysing the current planning and development needs towards a better future. Many of the responses stated that their planning system is reforming the current planning and development system to ensure the local government continued growth and prosperity. They believed such reform has been driven currently from extensive consultations. They believed that these changes will further assist in delivering a contemporary planning and development system that would provide sustainable development outcomes for all stakeholders. This current ‘As-Is’ planning system reform actually aims to streamline application assessment and approval processes, to remove unnecessary red tape and to re-empower local governments to plan for their local communities. Statement provided in the following table.

Question 24:

How do you see the future 'To-Be' state of planning system in your Council in reference to KM?

Regarding the future 'To-Be' state the majority of the participants responded that in future the planning portal will take the input from the applicants and that people will have confidence with the portal offering 24x7 access. They suggested that the planning data probably will be the easiest data to share. But it is quite challenging for to handle data appropriately. They stated that their council will be adopting their APLAWS (Accessible and Personalised Local Authority Website System) structure, underpinning all metadata tagging, within the Web services development. There are currently identified gaps which need to be addressed in order achieve the desired future 'To-Be' state for sustainable development. ICT strategies need identifying and developing that can build the relevant skills needed for local authorities' success.

Question 25:

To what extent is the future of the planning system in your council going to depend on effective knowledge workers using emerging technologies to achieve smart and sustainable development?

It was identified from final survey interviews responses that in future the UK local government will consider further improvement in their planning system based on an integrated knowledge management where the knowledge workers will use emerging technologies to deliver sustainable development faster, within minimum resources but with high reliability. The electronic services will be available 24 hours a day, 7 days a week. Some participants responded that in future the access to the desired expertise will be accessible for both individual and collective knowledge sharing practices. It is also believed that knowledge will be managed in a secure environment to encourage employees to effectively share and transfer their expertise using emerging ICTs as per the local government authentication mechanism for public data online accessibility.

8.3 Planning System Transformation

This research study focuses on the identification, integration and creation of knowledge management in the planning system. The researcher observed during the fieldwork that currently even a single step in this direction requires some kind of technological involvement in a framework. The proposed framework enables the transformation of the planning system through identification and management of supportive and preventive knowledge factors. The research framework was drawn up to examine the prospects for KM across functional planning and development teams. The proposed framework was based on some important steps to identify and analyse the management of tacit and explicit knowledge domains to enhance efficiency and effectiveness in the planning system that includes:

- Identifying what supports the management of tacit and explicit knowledge from individuals in the planning system and how they share it between teams.
- Identifying what prevents the sharing of tacit and explicit knowledge from individuals and how key barriers constrain the KM between cross functional planning teams.
- Identifying the key supportive and preventive knowledge factors that make it possible to articulate how key stakeholders deal with different kinds of knowledge being created at different levels of planning process while integrating the emerging technologies.

It is apparent from these three points that an integrated knowledge based planning system could become a reality, as externalised knowledge is not sufficient enough for a reform in the planning system. For this reason the researcher has examined both the explicit and tacit domains of knowledge. The way knowledge is treated in local authorities forms complex patterns. To integrate these patterns requires a deep understanding of how planners identify, share and manage their knowledge and how they exchange their expertise to improve efficiency and effectiveness.

The research results are synthesized in the evaluation of case study evidence in the previous chapter (Ch-7), to describe how it is possible to identify, create, integrate,

manage, share, transfer and recreate knowledge to enhance efficiency and effectiveness in the planning system. The case study evidence shows that an effective knowledge strategy is strongly dependent on the council employees' coordination, motivation and training. Planners are expected to conduct preliminary evaluation checks to verify and validate the planning applications received, and at this stage tacit knowledge sharing dominates their responses.

Knowledge management between and across planning teams varies significantly depending on the configuration and arrangement of staff responsibilities and how they share their expertise within their council structure. In general, the planning structure must align and integrate the available human and technological resources to facilitate an active application with key knowledge factors. The planning officers engaged in the entire process of planning system are confronted with a variety of challenges because a single document needs attention and approval from various units during the development project. An integrated knowledge based planning system offers a mechanism to identify, integrate and create knowledge throughout the planning system.

When the planning application moves into an advanced phase, planners are mainly engaged with the stakeholders in a feasibility study and consultation of sustainable development: social, economic and environmental factors. The transformation of planning system from an 'As-Is' state to the 'To-Be' state demands *identification*, *integration* and *creation* of knowledge factors as shown in the graphical illustrations below (Figure 8.1, Figure 8.2 and Figure 8.3). The following three graphical illustrations highlight the process of KM in the planning system transformation with three key areas of supportive and preventive elements to identify, integrate and create knowledge to achieve a knowledge based planning system. The tacit knowledge is derived from language, science, education, and management to sports, art, and our interaction with technology (Collins, 2010).

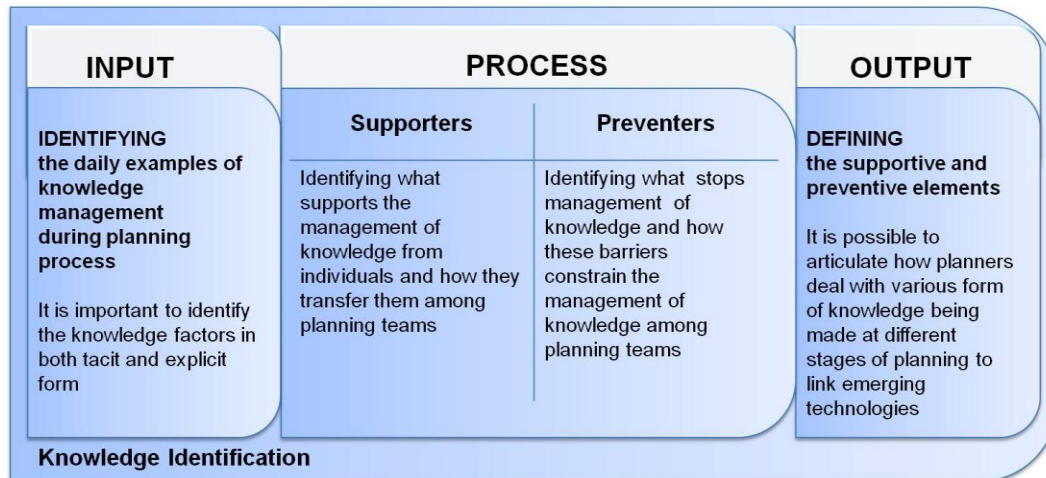


Figure: 8.1 (Knowledge Identification Process in the Planning System)

Source: Nasrullah Khilji

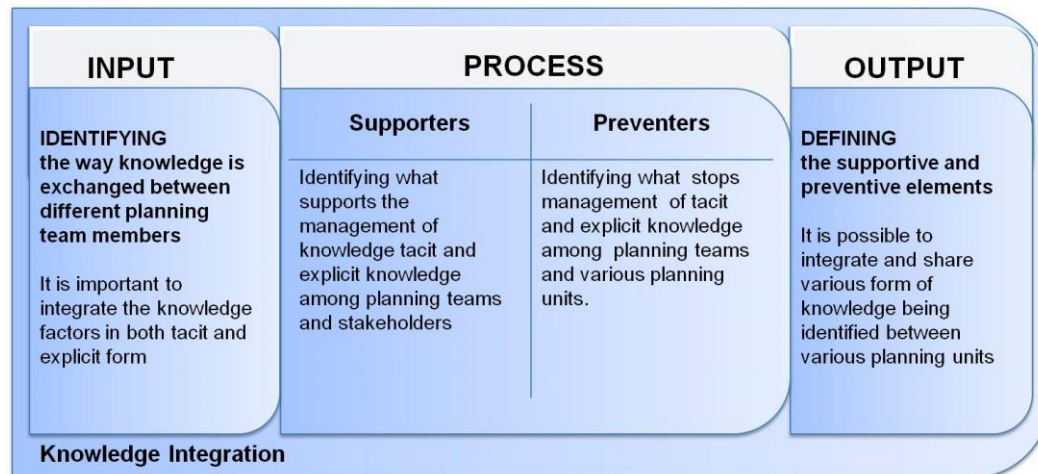


Figure: 8.2 (Knowledge Integration Process in the Planning System)

Source: Nasrullah Khilji

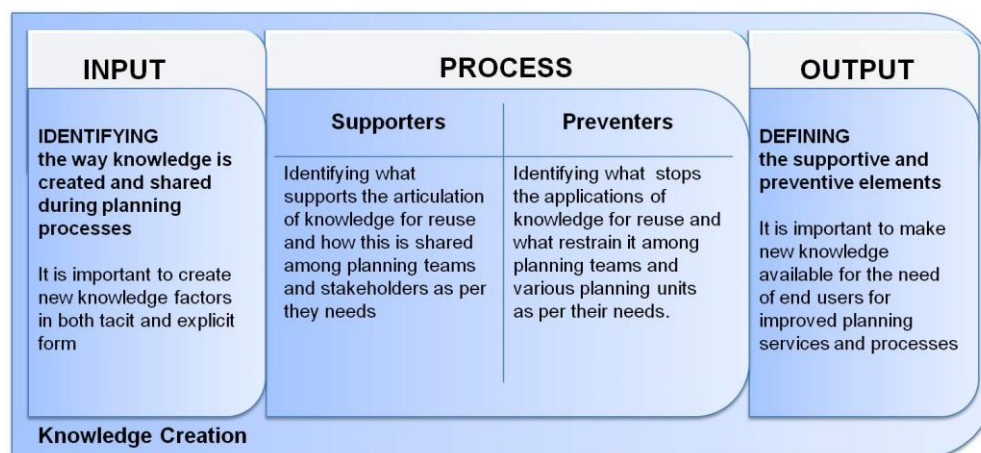


Figure: 8.3 (Knowledge Creation Process in the Planning System)

Source: Nasrullah Khilji

8.4 Critical Review

As discussed in the previous chapter (Ch-7), the overall research results are compared against the key findings from the literature review and case study findings to perceive different aspects of similarities and contradictions. The critical literature review and the survey findings are in agreement on several issues. The key issue in both literature and the research findings is about the common misconception in the planning system transformation being easy and simply a technological change (Hamner and Al-Qahtani, 2009). The research findings indicate that the local government planning system transformation in reality should not be totally related to the technological exploitation rather put stress on other key identified knowledge factors such as *local government structure, leadership vision, management styles, organisational culture, people motivation, staff training and coordination strategies*.

The local government strategic initiatives about the development and implementation of an 'integrated knowledge based planning system' are revealed from the evaluation of case studies' evidence. The planning system transformation is observed as a continuous and complex process with various key challenges, which are needed to be addressed for enhanced efficiency and effectiveness. The research findings show that technology is probably the easiest one to overcome as it is relatively inexpensive to enhance efficiency (Schwester, 2009).

The most challenging issue is related to the nature of knowledge in itself because unlike static information that can be held in databases and on paper, knowledge is dynamic in its nature. Knowledge is based in sentient beings, or emanates according to the need of the situation, and thus, it is always changing with the human experience and expertise. In the local authorities, where the planning system depends on personal interactions with others, knowledge has both an active and a social dimension (Brown and Duiguid, 2000). It means knowledge is carried, transferred and digested by personal relationships over time. It has an active social life which means that knowledge is always changing and in a state of flux, knowledge is steeped in context and richness (Sbarcea, 2001).

The Head of Customers, ICT and Cultural Services at Northampton Borough Council expressed her views by saying, *'in my opinion, although technology is just one of the planning reform aspects, which actually represents the least imperative problem, it is relatively simple to get the necessary tools, develop networks and claim that e-government is done in all the UK local government departments, where other issues are equally important, such as organisational culture, political will, finance etc.'* (NBC, 2012).

The local government staff members have become accustomed to delegate repetitive work to computers such as calculating, sorting records, spell checking, word processing, etc. This habit of task delegation has become a routine use of computing systems, which may be promising should computer technology be able to support knowledge management in the future.

It is common to see advertisements offering a software package as a 'Knowledge Management Solution' for successful knowledge based organizational management. Sbarcea highlighted both the supremacy of computers and a general techno-utopianism that views only data as real knowledge. The idea that data processing, storage, retrieval and access is a feasible basis for knowledge management is a false assumption (Sbarcea, 2001). However, technology can certainly make many aspects of knowledge sharing possible, but it is a mistake to equate knowledge management with technological tools or IT applications alone (Stewart, 2001).

Knowledge management must rely on human intelligence, energy and the will to cooperate and use expertise in collaborative endeavours. Technology can help, but the active nature of knowledge means that human involvement is a firm prerequisite for an integrated knowledge based planning system. In addition, the current study data indicates that great savings can be achieved from the technological integration in order to justify the cost of innovation. This is similar to the findings of some scholars, such as Homburg (2008), Kim (2004), Vassilakis et al., (2007), Ebbers et al., (2008), Cullingworth and Caves (2013), and Dalkir (2014).

The UK local government is constantly upgrading services and systems. Some councils are also outsourcing and signing long term agreements with multinational companies for continuous improvement in their processes. They are encouraging innovation to overcome technological challenges and difficulties in their processes through partnership with well-established firms such as Fujitsu, Mouchel, Civica, IDOX, Cisco, Microsoft and IBM etc. Cambridgeshire and Northamptonshire County Councils entered into a groundbreaking tripartite partnership with Fujitsu to create a unique ERP shared service. Based on the Oracle e-Business Suite (11.i.10), this solution enabled the two councils to share the delivery of back office processes and transactional services across a range of key functions, including finance, human resources, on-line procurement and payment facilities. The underlying infrastructure is owned, hosted and managed by Fujitsu, which also provided shared technological support and development (Fujitsu, 2014).

The Head of ICT Strategy at Central Bedfordshire Council said in a statement, *'over recent years, many local authorities have decided to outsource their ICT services to achieve efficiency, effectiveness and great saving. There are many experienced and very well established international ICT companies that are encouraged to set up agreements with the council for better public services delivery'* (CBC, 2012). The Fujitsu (2012) ERP shared services project is implemented for the first time in which local government in two county councils have collaborated on such a large scale on the strategic development of an ERP shared service.

The chief executive of Civica, said, *'Luton Borough Council has taken an innovative approach to the urgent challenges as many authorities are facing to build long-term relationship for outsourcing. The provision of managed and outsourced services in areas where the company has specialist expertise is fundamental to Civica's strategy and we are delighted to support a partnership that will become a centre of excellence in local service delivery'* (Lauchlan, 2013)

The implementation of an integrated knowledge based planning system is possible if the current planning system 'As-Is' is transformed to its future 'To-Be' state. The

transformation of the planning system to its desired state is not only dependent on technological aspects but it also requires the significant improvement in all other identified supportive and preventive knowledge factors. For this reason, the researcher considered the human resource matter as equally important as the emerging technological aspect and other groups of knowledge elements. The Assistant Director IT and e-Government at Milton Keynes Council stated, *‘for system integration, we consider emerging technology as a useful apparatus not an ultimate goal, the ambition is to develop an effective work system, even if it is not fully computerized. That is why one of the suggested approaches to reform the system requires both human and technological resources improvement side by side: specifically articulating the job description, developing the accurate technology and unifying the work procedures’* (Jewell, 2012).

Knowledge management is not something that can be simply achieved by technological advancements only. However, the technological tools are helpful to facilitate, support, transfer, share and manage knowledge but as such it can only be identified and created by people. It is one of the key objectives of this research study to classify an environment in which knowledge discovery, creation and sharing is encouraged and enabled (Desouza, 2015). The researcher fundamental hypothesis is that knowledge management in the planning system depends on: coordination, motivation and training among planning system stakeholders. Training and learning in this study are focused on in the broadest sense for the reform of the local government planning system. Even top level experts, who are few in number in a council, need to learn how to share, transfer and manage their individual expertise (Hislop, 2013).

The problems for investigation in chapter one (Ch-1) and the literature review in chapter two (Ch-2) helped the researcher to identify some key issues including the citizen’s confidence in the electronic services and the use of the online planning portal. The citizen’s trust in the local government’s information and communication technologies (ICTs) security was identified as key issue. The citizen’s confidence in the local government back office database was also identified as an area of concern. The issues identified are evident from the fieldwork empirical data (Markovski, and Gusev, 2013).

The local communities still have a lack of trust in emerging technologies as part of a new planning system. This study has observed that councils usually have a negative opinion on implementing new IT tools in general and the web technology in particular such as cloud computing. Nonaka and Takeuchi (1995) studied how knowledge is produced, used, and diffused within organisations and how such knowledge contributed to the diffusion of innovation. A number of organisations, perceiving the value of measuring intellectual assets, recognized the growing importance of organisational knowledge as a competitive asset (Sveiby, 1996; Davenport and Prusak, 2000; Collison and Parcell, 2004; Hamel, 2007; Hislop, 2009; and O'Dell and Hubert, 2011).

The evidence from literature reviewed and fieldwork reveal great concentration to the internal and external information environment of planning system for knowledge sharing and technological integration. This means that the planning system transformation is fairly dependent on the political element as a preventer to initiate and maintain an integrated knowledge based planning system. This factor includes the lack of political officers' commitment, vision, motivation and their insufficient support to develop a fully integrated knowledge based planning system. This knowledge preventer also includes senior level planning executives' with little awareness of the major benefits and great importance as well as of a clear ICT strategy and uniform planning policy (Boswell et al., 2011; Padovani and Young, 2012; and Hislop, 2013). But views can be divergent! The local government political preventers did not seem very much apparent during the exploratory process modelling study (Ch-5).

The local government planning officers do not have apparent issues in supporting the implementation of knowledge based planning system under the e-government umbrella as debated in the main study (Ch-6). The support of leadership, political will and senior level motivation appeared to be strong supportive factors for the success of an integrated knowledge based planning system (CMT Model-I and CMT Model-II). The senior administration is aware of the benefits and values they could get from an integrated knowledge based planning system and they would like to be engaged

positively in the planning system transformation. This engagement and commitment is represented by offering financial strength, focusing on strong coordination strategy, reforming planning procedures, dedicating human resources to develop and implement the knowledge based planning system by providing their time and effort, as well as the political, economic, social and technological atmosphere. All of these contribute to the improvement of workforce capacity and creativity.

The literature reviewed on innovative communication channels has wide perspectives but at the same time it is as diverse as the traditional organizational structural approaches. From this perspective, innovation is seen as an entity with fixed parameters (e.g. a new technology or management practice) which is developed externally, packaged by suppliers and then transferred to potential users where it could be seen to offer them competitive advantage (Wolfe, 1994). In order to support the planning system with innovative communication channels, it is important to encourage an open system of knowledge sharing through discussion, dialogue, training and coaching for effective communication both inside and outside the organization.

The ICT Head at CBC stated, *'for effective communication, innovation has been aimed, either at helping suppliers to diffuse the latest best practice of innovations or at helping users to implement them appropriately. From this point of view, networks are treated as structures through which information and knowledge without any problem can be transferred from external source to internal users so that new changes of reform can be easily applied within the local government'* (CBC, 2011). The planning portal director Chris Kendall (2011) says, *'we continue to actively encourage e-communications for all LPAs as it removes unnecessary and duplicate activities and lets them quickly realise savings and efficiencies with no effect on the service quality provided. E-working has also encouraged us to review other areas of work that may benefit from technology'*.

According to research findings, some legislation stands in the way of an integrated knowledge based planning system implementation as laws are difficult to change. The change in law takes many years to issue and implement in UK. The changes in

legislation usually takes too long for any new law to be thoroughly examined, regulated and then to be presented. The deputy mayor and Vice-Chair of the council said, *'when the computerised services were introduced, there was a need to change and create some legislations for councils to deliver public services in UK. For example, the community rights laws, data privacy and computer crime laws, the laws regarding the virtual presence of the data and the adoption of an electronic signature or authoritative electronic correspondence required to be properly addressed. There was an absence of a legal model governing the process of verification of identity through the Internet. In the transformation, the law took long with continuous need for new legislation approving digital data security and certifying subsidiary e-services providers'* (MKC, 2012).

From the literature reviewed and throughout the case study fieldwork, the researcher emphasised the importance of integration between two types of key resources: human resources and technological resources, in order to find a solution through a socio-technological system. Human factors included *the skilled qualified personnel at technical and management levels, professional expertise, knowledgeable workforce and e-government experience*. The technological factors refer to different issues: *system automation, cloud computing for virtualisation, web-centric applications, mobile applications, user driven process intelligence, social media and multi-channel accessibility*. Most of the senior officials confirmed that the necessary technological resources are in use but there is a need of integrated knowledge based system.

The e-Planning Blueprint, published in August 2004, sets out the vision for a 'world-class' e-Planning Service (e-Planning Blueprint, 2003). E-planning blueprint has been designed around customer needs and sets out the planning services that could deliver the vision. The preliminary statement of a world class e-planning service is: *'A world class e-Planning Service will deliver new, more efficient ways of enabling the community to engage in developing a shared vision for their local area, easier access to high quality, relevant, information and guidance and, streamlined processes for sharing and exchanging information amongst key players'* (PARSOL, 2006). However, a few

interviewees mentioned some instances where insufficient funds and the current recession are building pressure as they represent a threat to the planning system transformation. This shows that the current climate and funding issues are also challenging issues for the future of the e-government service and the implementation of knowledge based planning system.

This research study aims to examine the adoption of new and smarter ways of delivering planning system to eliminate unnecessary red tape bureaucracy. It is about reforming the planning system towards sustainable development with enhanced efficiency and effectiveness. The transformation of the planning system is basically an idea of delivering public services at local level better, faster and cheaper. ICTs dynamic is fuelled by the financial and time savings as the local authorities' desire to do things better. This has given the confidence of investments in the UK local government for enhanced efficiency and effectiveness (Oakfords and Williams, 2011). However, the researcher in this study preferred to focus on the application of socio-technological system with both human and technological resources' integration for the successful implementation of an integrated knowledge based planning system (Allan, 2013).

In this research study both supportive and preventive knowledge factors for tacit and explicit domains were identified, analysed, categorised and synthesised into main and sub-groups with assigned codes. The identified knowledge factors for knowledge management justification were also categorized among the different stages of the planning system starting from the evaluation phase to approval phase. This study filled the identified gap with explanations of the solutions to overcome the preventive factors encountered in the pragmatic framework development of collected evidences.

The key research findings would support the planners to better understand how they can best develop and implement an integrated knowledge based planning system in their council. The research results would help the local authorities to avoid the failures of their e-government initiatives and the huge direct and indirect costs accompanying such failures. The research findings provide an empirical framework that examined the

factors affecting the development and implementation of a knowledge based planning system from the UK local government perspective. Finally, this research study has investigated how emerging technologies and a knowledge based planning system in the UK local government can be appropriately designed, developed and implemented by overcoming the preventative factors while stressing to encourage on supportive factors.

8.5 Constraints and Limitations

From the preliminary stage of this research study and at the commencement of data collection, the researcher became aware of the developing orientation in the study towards human motivation, technological advancement and the integration of both human and technological resources in the planning system. The researcher also realised a strength of public antipathy towards the local government bureaucracy on the one hand and a resistance in the attitudes of planning staff to other key stakeholders' perspectives. After initial interactions with the local government officials, the researcher made a conscious effort to be equally open to all observations and to be sensitive to these issues in noting his encounters and records with key field participants as well as raising these issues in sessions with his supervisors.

- The most characteristic limitations of this research study are related to the mixed research methodology and exploratory case study method. *The researcher tried to overcome this limitation by adapting multiple sources of data collection to show the variety and complexity encountered. The researcher also confronted a reliance on collecting research data from a single local authority at the preliminary stage by adding four more local authorities in the South East Midlands during the process modelling preliminary study.*
- Another limitation encountered by the researcher was related to issues of time. It took a long time and patience to establish a ground for data collection within the participating local authorities. Confirmation of interview schedules was a challenging job because of time constraints and the demands of participant's posts within local government. *The researcher successfully overcame this*

limitation by maintaining parallel contacts with multiple participants through email correspondence and follow up calls to confirm their availability in their own time.

- Another relevant limitation was the allocated interview time, which was usually 60-90 minutes. *To overcome this limitation, the researcher tried to set up preliminary arrangements with interviewees with the help of email correspondence well before the scheduled interview conduct.*
- Lack of direct personal relationship and access to the local government setting was an inherent limitation. *This limitation was solved by active participation in local and regional events to build personal networks and contacts.*
- Another challenging issue in this research study was to identify and articulate ideas that help to capture the differences between supportive and preventive knowledge factors across planning teams in order to obtain and share expertise held by individual experts. *By identifying the supportive and preventive knowledge factors, it became easier to articulate the way in which planning staff deal far more efficiently and effectively with uncertainty in the planning processes while applying human and technological integration to deliver better and quality planning services.*
- Within the time at the researcher's disposal, the total number of local authorities that were recruited and studied in this research study was five. This is a limitation numerically but from the amount and variety of the data collected there are clear trends manifest to provide a level of confirming evidence.
- The initial attempt to reveal the preventive factors in the participating local authorities was through interviewing senior level planners working at the decision making and implementation levels of these authorities. *The participants tended to react and respond to the research questions about supportive and preventive knowledge elements within their local development project perspectives.*

8.6 Chapter Summary

In this chapter (Ch-8), the emerging strategies are discussed towards a knowledge driven planning system reformation by conducting the final survey. The researcher has presented a general evaluation about the planning system transformation within the five participating local authorities. The proposed frameworks are evaluated using different approaches by examining the identified knowledge factors that influence the transformation of planning system to acquire its future 'To-Be' state within the South East Midlands five participating local authorities. Concerning the respondent validation strategy, an explanation of its process is critically reviewed in addition to the details of the validation sessions and interviews during final survey. This chapter (Ch-8) aimed to validate the final framework, the identified supportive and preventive factors for overall validation of research findings. This chapter provided evidences to evaluate research results that helped the researcher to frame research contribution, its implication and key recommendations in the final chapter (Ch-9).

CHAPTER 9**SHAPING THE FUTURE:
CONCLUSION & RECOMMENDATIONS**

This chapter (Ch-9), provides the conclusion to the whole study. The influence and significance of this study is discussed as a contribution to a new model for enhanced efficiency and effectiveness in the context of smart and sustainable development. The research implication and key recommendations are presented for future research while highlighting thesis contribution to practice in the context to achieve enhanced efficiency and effectiveness in the planning system.

9.1 Overview of Problem and Process

This study originated from an identified research gap which is to examine the application of an integrated knowledge based concept to the planning system. There have been relatively few studies on innovative communication channels, effective coordination strategy and integrated knowledge management in the UK local government and this became the principal justification for this study. The major aim of this research was simply to investigate a transformation in the planning system to achieve improved efficiency and effectiveness for sustainable development. The researcher decided to evaluate the knowledge management concepts of relevance to local government ICT strategy as a source of innovation in the planning system.

This study opted for a mixed methods research design to address the key research question. The literature review process provided the theoretical and conceptual background that has helped to understand the nature of public planning services in local government. This also provided a focus to understand how socio-technical system and knowledge management play an important part in an efficient and effective planning system towards smart and sustainable development.

The researcher comprehended the need for studies to fill the identified research gap by identifying supportive and preventive knowledge factors. Thus it was decided to examine the planning system from its previous 'As-Was' state to the current 'As-Is' state in order to assess its future 'To-Be' state. Through empirical fieldwork the essential supportive and preventive knowledge factors were identified. The major supportive elements included *vision, strategy, leadership, public support and finance*. The distinctive constraint in the current planning system was related to the bureaucratic outlook as a major preventive factor with elements determined by *legislative, political, economic, technological and environmental factors*. It was equally important for the researcher to examine the relationship between planners and their systems outsourcing partners, which meant that the mixed methodological approach with diverse methods was the appropriate approach for data collection and analysis.

This study was carried out through a literature review, modelling and varied fieldwork to facilitate the understanding of planning system reform in the UK local government. From the broad view on sustainable development, the review of literature then focused on the innovative communication channels and emerging technologies involved within the planning system. This exploratory study led to the concept of efficient and effective planning system based on three fundamental research elements: *coordination, motivation and training* as portrayed in the empirical research framework CMT Model-I (Figure 6.6).

An integrated knowledge based planning system is a construct where tacit and explicit knowledge domains interchange and reveal supportive and preventive knowledge factors. The supportive and preventive factors are aligned to the innovative communication channels, effective coordination strategy and integrated knowledge management. In the UK local government, the coordination between planning teams has been investigated while examining the transformation of the planning system from its previous 'As-Was' state to its current 'As-Is' state (Figure 5.12).

In order to gain the maximum output from this research study, the planning system future 'To-Be' state had to be investigated. The fieldwork confronted this study with various challenges including the limitation in terms of accessing local authorities, because of their time restrictions and busy schedule. The researcher found it difficult to look into all aspects of contemporary and customer oriented planning system. However, the researcher considered various themes to be important for the future 'To-Be' state during the review of the literature and fieldwork evaluation. This was helpful to assess the planning system transformation towards its future 'To-Be' state. The identified knowledge factors were verified from collected data during the process modelling in chapter five and chapter six (Ch-5 and Ch-6). The process modelling study was carried out to enable the researcher to have a better understanding of the current local government planning system. The findings from the preliminary and main studies were evaluated, and the results were applied in main data evaluation in chapter seven (Ch-7).

The researcher carried out the empirical study by opting for a mixed methodological approach. The researcher preferred to exercise unstructured interviews to encourage participants to speak and share about the informal or personal experience. The field interviews were conducted at suitable on site locations, such as a boardroom, council cafeteria or restaurant to collect insightful primary data. This certainly helped to collect evidences on the actual planning system features and functioning within the participating councils. The interviews were recorded for data validity, audit trail and analysis in this study while using some tools i.e. MS Excel, QRS NVivo and MS Project.

The data validation was applied with three key techniques such as audit trail, triangulation and persistent observation to authenticate the data for the research outcomes. The local authorities were observed using technological tools from prominent suppliers satisfactorily. However, there was a need to identify how they could integrate the various systems to achieve improved public services. The researcher realised a need for in depth investigation from the fieldwork. A lack of innovation was one of the main problems within the local government. Although the participating councils did have some research and development activities for in depth analysis for their future needs. The local authorities examined were dependent upon their suppliers to provide them with solutions for their requirements.

The empirical data analysed helped the researcher to propose a pragmatic research framework 'PKOT Model-I' (Figure 6.6) in chapter six (Ch-6). The synthesis of collected evidences in chapter seven (Ch-7) helped to upgrade the proposed framework into 'PKOT Model-II' (Figure 7.2), based on four fundamental principles: *planning process, knowledge management, organisational culture and technological exploitation*. During fieldwork, the senior planners responded that KM generates new opportunities for staff to develop their skills, performance and experience through knowledge sharing. However, they believed that knowledge management policies within local government are still at an embryonic phase. An easy and open access to the best knowledge management practices was observed as the core issue of time.

The researcher found that the general public participation in the planning system could also be influenced by political motives and the relationship between council and local communities. It means, if the local communities are not involved in the initial planning process; the project is likely to face challenges from pressure groups. The PKOT Model-II, with four key elements provided an opportunity to address both internal and external information environments for tacit and explicit knowledge domains (Figure 7.2). The evaluation of the data collected provided the researcher with enough evidences to further analyse, synthesis and understand the planning system transformation towards its future 'To-Be' state (Figure 7.4).

9.2 Overall Synthesis of Results

The most important motive of this research study was to explore innovative communication channels, effective coordination strategy and integrated knowledge management in the UK local government planning system. This study was conducted to identify and assess key supportive and preventive knowledge factors in the development and implementation of an integrated knowledge based planning system.

The key motivation behind this study was to examine the e-government agenda in the UK local government by examining the reformation of internal processes in the planning system. This thesis is documented in 10 chapters, which are grouped up into 4 parts.

9.2.1 Part-I (Background)

In first chapter (Ch-1), the research study is introduced with its background, aims and objectives. The introductory chapter has outlined the elementary research question. The research background is introduced, and the research motivations, originality and significance are described. The analysis of problems for investigation is also discussed in chapter one (Ch-1) to spot key research gaps. In the second chapter (Ch-2) the literature review is highlighted. The purpose of second chapter is to present a critical review of the academic literature on the area of planning information systems and online government service delivery i.e. planning portal. This chapter helped to identify research gaps in the existing pool of knowledge, and

accordingly to provide a better understanding about the research areas. The first part (P-I) of thesis provided a base for grounded theory about an integrated knowledge driven planning system in the UK local authority.

9.2.2 Part-II (Method)

To achieve the set research objectives, suitable research strategies are developed in the chapter three (Ch-3), and the mixed methodological approach is outlined here. The researcher also presented the research philosophy, paradigm, design and research methods in order to answer the key question for accomplishing the set research objectives. Chapter four also justifies the methodological approach adopted during the fieldwork to identify, understand and analyse the influences of key research propositions. This is done by discussing some of the well-known strategies that confer research credibility on data validity and how these strategies play an essential role in the research evaluation process.

The details of the procedures undertaken for the data collection, in addition to the techniques applied for data analysis and evaluation, are described in the chapter four (Ch-4). The rationale for selecting the appropriate approach, method and technique for data collection and analysis are discussed here. The purpose of this chapter is to explain the details of key procedures undertaken for the research field data collection, in addition to techniques and approaches applied for data analysis.

9.2.3 Part-III (Fieldwork)

In the chapter five (Ch-5), the preliminary study for process modelling is conducted through the description of the existing conceptual and theoretical frameworks. The relevant frameworks in context of the planning system are discussed with key benefits, strategies, the main obstacles, and how these are overcome and what resources are used in the planning system reforms. This exploratory study provided a background to identify and examine supportive and preventive knowledge factors for both tacit and explicit domains in the perspective of an integrated knowledge based planning system.

This exploratory study is actually based on a comprehensive review of the relevant theoretical models and a combination of prior literature that conceptualised the technological challenges in the UK local government planning system.

The main study is carried out in the chapter six (Ch-6), to illustrate the outcomes of the data analysis in order to develop the proposed research frameworks with the evaluation of case study evidences and key research findings. The chapter six commenced with the recruitment and description of five participating local planning authorities in the South East Midlands as case study. This study is conducted to explore the emerging technologies and consolidated ICT strategies within participating local authorities for an integrated knowledge based planning system. It is thus necessary to examine the conventional and contemporary states of planning system and its transition towards smart and sustainable development.

The cross case study data analysis and evaluation of case studies' evidence is conducted in the next chapter (Ch-7), and thus the final framework is developed for more descriptions and explanations about the identified supportive and preventive knowledge factors as specified here. The key benefits resulting in this data analysis are identified and highlighted here. The fieldwork participants' views and ideas of each local authority are also summarised. This is followed by a detailed explanation of the data comparison for the proposed framework implementation to achieve the future 'To-Be' state of the planning system.

9.2.4 Part-IV (Result)

In the chapter eight (Ch-8), the researcher presents the general discussion and the results of a final survey undertaken as a reflective and dynamic overview of the entire research field studies for validation and evaluation. This weaves together multiple aspects of the study including the literature review, research methods and data analysis. The research gap analysis, critical review, constraints and key limitations are also discussed in this chapter.

Finally in the last chapter (Ch-9), a conclusion about the research key findings is presented along with the research contribution towards knowledge management to develop and implement an integrated knowledge based planning system in the UK local government. In the end, implications for both theory and practice with key research recommendations for future further research are presented.

The structure of this thesis is summarised in the graphical illustration to reflect the entire voyage of this research study from start to finish as presented in appendix (Appendix: G-1.2) and tabulated in the following swift illustration (Figure 9.1).


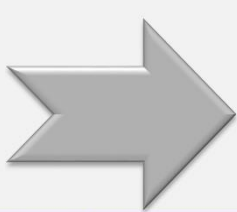
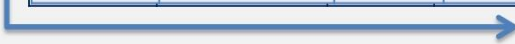
Research Fieldwork	Preliminary Study		Main Study				Final Survey		
Methods	Interview	Questionnaire	Interview	Questionnaire	Online Forums	E-Mailing	Interview	Questionnaire	
App: A-1.2, A-1.3	Interviews 3-Sessions	Questionnaire 24-Responses							
App: A-1.4 , 1,2,3,4/A-1.5	Interview 5-Sessions	Questionnaire 29-Responses							
F: 7.2, 7.3, 7.4 T: 7.1, 7.2			Interviews 4-Sessions	Questionnaire 25-Responses	Forums 12-Rep	E-Mailing 13-mails			
App: B-1.1, B-1.2, C-1.1 & 2			Interview 6-Sessions	Questionnaire 12-Responses	Forums 10-Rep	E-Mailing 8-mails			
D-1.1 to D-1.6, E-1.1, E-1.2 F: 8.2, 8.3, 8.4			Interviews 8-Sessions	Questionnaire 19-Responses	Forums 8-Rep	E-Mailing 14-mails			
F: 9.1, 9.2,9.3 F-1.1, F-1.2							Interviews 6-Sessions	Questionnaire 16-Responses	
Meta Models	CMT Model-I	CMT Model-II	2Es / 3Es Model	PKOT Model-I	PKOT Model-II	'As-Was' 'As-Is' Models	Transformation Models	'To-Be' Model	
Time Frame	Year-1 2009	Year-2 2010	Year-3 2011	Year-4 2012	Year-5 2013	Year-6 2014	Year-7 2015		
Chapter 1	Chapter 2	Chapter 3	Chapter 4	Chapter 5	Chapter 6	Chapter 7	Chapter 8	Chapter 9	Chapter 10
PART-I 'Background'		PART-II 'Method'		PART-III 'Fieldwork'			PART-IV 'Outcome'		

Figure: 9.1 (Research Fieldwork and Project Summary in Graphical Matrix)

Source: Nasrullah Khilji (For enlarged size see Appendix G-1.2)

9.3 Research Study Significance

The examination and understanding of the planning system complex within local government was the first step in defining the baseline within which the research is framed. The findings of this research study are of potential importance to various officials, senior teams, planning staff, key units and departments within the local government. The outcomes of this study could also be considered for application in various other organisations in both public and private sectors. Some of the key areas of benefit from this study are discussed below.

9.3.1 Planning System Improvement

This research study has focused on the key knowledge factors that are affecting the efficiency of human resources and the effectiveness of technological resources in the planning system. This study has identified its part in the planning system improvement, however further research would be required to examine the clusters of identified knowledge factors separately.

The study has the potential to contribute in the continuous improvement of the planning system and the research outcome could be applied to various other public services (such as council tax and benefits, waste and recycling, jobs and career, help with housing, health, education and transportation), by carrying out further in depth research in the relevant areas adopting the same methodological approach. The local government planning system evolves continuously to deliver better services. The planning system improvement is an on-going process in itself, which requires continuous improved. This study *‘through its results and outcomes’* presents the following contribution towards the planning system improvement.

- *The proposed pragmatic frameworks for an integrated knowledge based planning system in the UK local government for sustainable development.*
- *The evaluation of the fieldwork evidences towards an integrated knowledge based planning system for improved efficiency and effectiveness.*
- *A list of main and sub- supportive and preventive knowledge factors for both tacit and implicit knowledge domains.*

- *A strategy for lessons learned from the development and modification of proposed research frameworks for continuous reformation in the planning system (As-Is Model / 2Es Model / 3Es Model / To-be Model).*
- *A list of influential knowledge factors to facilitate the development and implementation of pragmatic research frameworks (CMT Model / PKOT Model).*

9.3.2 Planning Staff Support

The senior decision makers in the UK local government who are directly or indirectly involved in their ICT strategy and knowledge management policies within their council can find this study useful. The senior level planning system executives can play an essential role in identifying the key challenges their councils face. The planning staff can get support and enablement through the planning system transformation from its conventional bureaucratic paradigm towards smart and sustainable one. This study was conducted to support the planning staff by a proposed framework, which can be considered as a mechanism for effective decision processes towards sustainable development.

9.3.3 Public-Private Partnership

The private companies, which are supplying technological solutions to local government, especially those seeking partnerships with the local government for IT services in a public-private partnership, can also find this study useful. In addition, the proposed research framework can assist the idea of an integrated planning system. The public-private partnership provides a lesson learned example from the historic success of Milton Keynes and the plans for a Garden City at Old Hatfield (Knox, 2013).

9.4 Research Contribution

This study examined the willingness and readiness of local government to transit their planning system to its future 'To-Be' state towards smart and sustainable development. The fieldwork evidences specified that the future 'To-Be' state will evolve around an

integrated knowledge based planning system. This means, the planning system reformation will simplify and speed up the process cycle of planning applications which will no longer need to follow inflexible and deviating processes (Barker, 2006). This study assessed that the most appropriate methods to prepare and process the local development plans need integration of human and technological resources within the planning system, which is determined by the new planning regulations of delivering sustainable development (Barker, 2006).

This study makes a contribution towards enhanced efficiency and effectiveness of the planning system to achieve smart and sustainable development. The participating local authorities' responses were evaluated to categorise how they put their emphasis on innovative communication channels while publishing their documents on line. It also examined how councils were engaging with interest groups through web technology online. From the literature review process and fieldwork data, this study perceived that the Localism Act preserves its requirement for the local government to publish a Local Development Scheme (LDS).

The Local Development Scheme is the work programme identifying resources and setting out the plans to be prepared against an agreed time schedule. However, the LDS will no longer have to be approved by the Secretary of State but will be published on line and monitored on an on-going basis at the council level. The local council Executive Board also considered approving the prerequisite for a revised LDS to reproduce the new plan preparation timetable for future enriched planning system (SWC, 2014).

The primary purpose of this research study was to identify the key knowledge factors that influence the development and implementation of an 'integrated knowledge based planning system' in the UK local government. This research study provides a valuable contribution to the knowledge management policies by focusing the key supportive and preventive factors. The contribution of this study formulates a set of recommendations for enhanced efficiency and effectiveness in the planning system.

The research conducted an exploratory study involving five local authorities in the South East Midlands to identify key knowledge explicit and tacit elements. This research study was focused to provide findings that would assist the participating local authorities and other councils for improved efficiency and effectiveness. This study proposed pragmatic frameworks for an integrated knowledge based planning system and offers its empirical findings specifically to local government and generally to other partner and related organisations. This research study makes the following key contributions in particular:

9.4.1 Exploratory Research

This is an exploratory research study to investigate transformation of the planning system to its future 'To-Be' state in the UK local government. This study was carried out to investigate the impact of knowledge management in the development and implementation of an integrated knowledge based planning system (identifying supportive and preventative key knowledge factors). The mixed methodological approach was chosen and applied in three principle perceptions: *innovative communication channels*, *effective coordination strategy* and *knowledge management* in context of the planning system transformation towards smartness and sustainability.

9.4.2. Empirical Framework

This study contributed by proposing empirical frameworks that would provide assistance for integrated knowledge based planning system initiatives in the UK local government. The preliminary study provided a base for the main round of investigation and fieldwork data collection. The outcomes from the main study were evaluated to critically analyse key identified knowledge factors (supporters and preventers). The research results were obtained from matrices and networks developed during the interpretation of all interviews and analysing the documentary data. The research results and fieldwork reports were generated from exploring the relationships among major factors or categories identified from fieldwork to propose pragmatic frameworks (CMT Model-I, CMT Model-II, 2Es-Model, 3Es-Model, As-Is Model, PKOT Model-I, PKOT Model-II and 2-B Model).

9.4.2.1 Contributions from Pragmatic Models

The proposed research framework provided contributions in two major ways:

- (i) At the conceptual stage, the pragmatic models identified and classified the supportive and preventive knowledge factors evident from both literature and fieldwork.*
- (ii) At the practical stage, the pragmatic models presented a mechanism for moving the planning system towards sustainable development.*

The research findings suggest how to support delivery of high quality planning services that are secure, always available and which reach out to embrace key stakeholders in particular and the whole community in general. Some of the suggested benefits from an integrated knowledge based planning system are:

- **Customer oriented services**

This pays attention to the concerns of citizens and provides planning services fit for their purposes, when and where they want them with greater flexibility and control.

- **Local community ownership**

This empowers local communities to take ownership of community problems and urges planning officials to let people participate in local development to deliver public services efficiently and effectively.

- **Customised services**

Local service customisation and personalisation is more likely to meet users' and key stakeholders' demands, preferences and needs.

- **Online data availability and accessibility**

Internet has provided a useful way of communication and interaction between internal and external environments. The planning applicants and planning officials can become more effective by exchanging information through electronic means.

- **Smart networks**

Multidirectional networks are suggested for direct communication within internal, interdepartmental and external environments for knowledge sharing.

- **Channel shift**

This is providing innovative communication, effective coordination and integrated knowledge management based on coordination, motivation and training to transform the system towards smart and sustainable development.

9.4.3 Contribution towards Knowledge Management

There is a modest literature available related to knowledge management in its role in the UK local government. Most of the literature in the field of local government in the context of the planning system focuses the management information system, which are static by nature. This research recognizes the dynamic nature and approach of the planning system as an aspect of smart and sustainable development. This is how this study is differentiated from other theoretical studies that are usually based on information systems and online services instead of an integrated knowledge based approach. This study focused its main investigation on the philosophy of innovative communication channels, effective coordination strategy and integrated knowledge management. This study helped the researcher to develop his understanding about the key research propositions within the UK local government.

From the fieldwork the identification, integration and creation of new knowledge were examined principally from the cross data evaluation throughout case studies. The research data analysis was helpful to synthesis the key investigative propositions: innovative communication channels, effective coordination strategy and integrated knowledge management. This study facilitated to examine the role of socio-technical system by exploring the role of human efficiency and technological effectiveness (see for detail Figure 6.4 and Figure 7.2). The data analysis was carried out carefully as the participating local authorities were not the same and most of their planning processes and services varied as per their demographic and geographic circumstances.

The research results and key recommendations could be considered by the local authorities and their planning system partners to improve the current practices and to move forward towards smart and sustainable future 'To-Be' state (Figure 7.4). The research study offers its contribution to benefit local government in reconsidering how they might restructure their ICT strategies. This study has examined the innovative practices by proposing an integrated knowledge based planning system.

9.5 Implications of Research Study

- One of the implications of this research study is related to identifying key knowledge factors to achieve an integrated knowledge based planning system.
- The classification of key knowledge factors '*both supportive and preventive elements*' is considered as another key implication to influence the development and implementation of an enhanced planning system with greater efficiency and effectiveness. This study has highlighted some of the key supportive and preventive knowledge factors that could be taken in consideration at the senior level to be incorporated in the process of planning system continuous transformation.
- The future research to benefit from the fundamentals of this study for the new proposals to initiate in future is another key implication. This study highlights the prerequisite to explore the knowledge factors that could affect the planning system reforms over time. It would be also important to observe the relevant issues of identifying, sharing and creating new knowledge.
- The proposed framework in this thesis presents new ways through which technological integration, channel shift and e-government implementation can be considered to fill important identified research gaps in the area of knowledge based planning system. This research study primarily provides a specific framework and suggestions in the planning system transformation to acquire the future 'To-Be' state in the UK local government context.
- The proposed framework also explains the different groups and sub-groups of key factors that facilitate the development and implementation of change within the planning system towards smart and sustainable development.

- The easy and affordable access to the benefits offered by the online planning portal projects in the UK local government is considered as another important implication highlighted in this research study. The development of innovative communication channel is the fundamental requirement for importing the knowledge based accessibility.
- The emerging ICT tools are required to be considered as a mean of increasing awareness and for upgrading the skills and awareness of citizens. This study implies the importance of promoting the use of innovative technologies to motivate citizens to understand and be comfortable with the use of such changes such as mobile apps and Internet applications.
- The findings of this research study provide implications for different local government services in general and planning permission services in particular. The crucial aim of this research study is to provide suggestions to the UK local government to get assistance in the development and implementation of an integrated knowledge based planning system.
- Another important implication is about the decision makers in the local authority planning department to make an appropriate use of the internet based online planning system (planning portal). Many local authorities let their applicants to track the progress of applications on their websites, which is considered as one of the most successful developments in the local government e-services projects.
- The integration of technological and human resources is considered as a helpful approach towards exploiting online transactional services to reduce the overall cost of planning system provision. In addition, the application of technology in the local government planning system context is assumed to offer a better quality planning support services to key stakeholders and communities.
- The socio-technical system working environment for planners is another major implication of this research. The primary goal must be to achieve a high level of opportunity in the planning support services to provide citizens an opportunity to participate in the decision making process and to enhance efficiency and effectiveness in the delivery of the public services.

9.6 Key Recommendations

The UK local government is investing a great deal of resources in the continuous transformation of public services to make a reality of their e-government agenda. This research study has investigated the efficiency and effectiveness of the planning system in order to provide an insight into how to successfully develop and implement an integrated knowledge based planning system towards sustainable development. There are some key recommendations that would be helpful to assist the continuous reformation in the local government planning system so that it can achieve enhanced efficiency and effectiveness towards sustainable development as discussed below.

9.6.1 Internet Based Services

The key knowledge factors identified in this research study are dedicated to all the users of planning system. The case study research findings are collected from five participating local government planners' perspectives. It is clear from research results that planners and applicants are the major stakeholders in the planning system transformation to get benefits from an integrated knowledge based planning system. The research work in this context can be further extended by classifying the influencing factors that affect the use of Internet based services from citizens' viewpoints. All key stakeholders increasingly expect to access council and other public services online 24x7 at their comfort and ease. The internet based services offer significant opportunities for the optimum use of resources and towards a more responsive workforce strategy within the council.

9.6.2 Planning System Reform

The mixed methodological research adopted multiple sources for data collection and analysis depending on suitable techniques and the use of diverse methods. The local communities' points of view, as key stakeholders have been incorporated in the design, development, implementation and evaluation of an integrated knowledge based planning system. This has a significant impact by increasing the efficiency and effectiveness of planning system because of online planning services (planning portal) and the increasing use of e-services over innovative communication channels.

The senior decision makers in local government can be provided with further research support in future to provide them with statistics about the planning system transformation. The continuous planning system reformation can deliver better public services. The National Planning Policy Framework is an important part of the government's reforms to make the planning system less complex and easier to achieve improved efficiency and effectiveness. The Integrated planning and reporting (IPR) framework has set out how councils should plan for their future over the development of community and corporate business plans (NPPF, 2012).

9.6.3 Integrated System Perspective

A comprehensive fieldwork with five participating local authorities was conducted from the perspective of an integrated knowledge based planning system. However, the fieldworks have not established all the anticipated benefits due to key constraints and limitations (see in chapter eight (Ch-8), section 8.5). In future the fieldwork could be expanded by including more local councils with different contexts, which would lead this study to next level towards integrated knowledge based planning system.

An integrated knowledge based planning system sets out the key components that need to be further considered in a local government's planning system reform. It presents the key elements, and their relationships, that might be expected in an ideal fit for purpose and quality environment. In reality, the extent to which it is applicable will obviously depend on the size and complexity of the local council. It recommends that there will be differing capacity with the local government sector to implement an integrated knowledge based planning system and to manage it in line with new changes in the National Planning Policy Framework.

9.6.4 Customer Oriented Services

This research focuses on the clusters of key knowledge factors affecting planning system efficiency and effectiveness by developing and implementing new reforms. The future research would evaluate in depth each group and sub-group of identified knowledge factors independently and their effects in different settings. Moreover,

more research would be possibly carried out in the pertinent capacity with more focused methods towards the research major areas such as dedicated research project to the customer oriented paradigm or e-government planning services.

9.6.5 Continuous Exploratory Research

The proposed research framework in this thesis can be considered as the foundation for future research within the context of the UK local government planning system. Further research would continue to explore the existence of major knowledge factors according to the demographic and geographical areas. Future research could help to indicate the deeply enhanced planning system issues in specific areas (for example: remote areas, new developments or neglected area) and also to point out the other aspects that need efforts to enhance the use of e-government services.

The rapid adoption of mobile technology, on-demand and social media technologies have changed the expectations of public service delivery. These developments offer an opportunity for the local government to provide public services in innovative ways, and to interact through new modes of communication channels. Mobile, internet and cloud technologies provide further opportunities for innovation and efficiency. This research study offers an opportunity for further exploratory research in the field of innovation, coordination and knowledge management.

9.6.6 Comparative Research Attempt

In future research it would be possible for the researchers to consider the comparative nature of knowledge management in the planning system for enhanced efficiency and effectiveness towards sustainable development.

The identical comparative research efforts could be applied to other local government councils with different circumstances and their specific working environment given their specific demographic and geographic requirements. This will help the local government and their various units to join up their public service

strategies to support the planning system with strong collaboration, ICT enabled delivery processes, jointly commissioned IT infrastructure and e-services, pooled budgets, shared resources and performance measure, to capture and share the resulting benefits and savings.

9.7 Concluding Statement

The key purpose of this research study was to investigate an integrated knowledge based planning system in the UK local government for their enhanced efficiency and effectiveness towards sustainable development. This study examined the identified supportive and preventive factors that assist or hinder the set objectives in the local development projects. The main inspiration for this research was to explore the planning system within five participating local authorities in South East Midlands develop and recommend a socio-technical system supported by both technological effectiveness and human efficiency towards smart and sustainable success.

The literature review presented in chapter 2, together with the review of relevant conceptual models in chapter 5, provided a ground to address identified research gaps. The theoretical and conceptual frameworks were found helpful to assess the transformation of the planning system from its previous state 'As-Was' to current state 'As-Is'. To accomplish the research key aim and objectives, a suitable research strategy was designed followed by mixed research methodology and the rationale for selecting the approach for mixed methods and techniques as discussed in chapter 4. The research methodological consideration and key methods incorporated were detailed for the data collection and analysis.

The case analysis was conducted through the description of the five participating councils in chapter 6 in this study. A detailed explanation was provided to answer research question through addressing major research objectives by attaining benefits, strategies, the main obstacles and how they were overcome, and finally the resources used for local planning and development projects towards smartness and sustainability.

A network for research aims and objectives was incorporated to illustrate the outcomes of the data analysis and research result evaluation in the development of the outcome. The cross cases analysis was conducted in chapter 7, and thus the final framework was developed, and more descriptions and explanations about the identified supportive and preventive factors were discussed. Chapter 8 discussed the procedures and measures adopted to ensure the quality and rigour of this research's findings for validation and credibility and the usefulness of the developed framework through final survey. This was done by going back to the participating councils for their feedback and their future strategic plans to confer rigour on final framework. This thesis was concluded by looking into how planning departments in the UK government could embrace an integrated knowledge based planning system towards smart and sustainable development.

9.8 Chapter Summary

In this concluding chapter (Ch-9), the research journey from the beginning until the end of the field study is demonstrated. This chapter has described how the research question and key objectives are successfully addressed and how significant new knowledge driven systems could be applied to enhance the efficiency and effectiveness in the planning system. The key contributions and significances of the research study are discussed to outline the future state of the planning system. The timeframe of the entire research project is shown in the graphical matrix (Figure 9.1) to highpoint the key milestones achieved during the fieldwork from start to the end. The researcher finally recommends several areas for further research relating to an integrated knowledge based planning system in the UK local government towards sustainable development with enhanced efficiency and effectiveness.

Bibliography & Appendices

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FIELDWORK:

APPENDICES

Appendix: A-1

Section: A-1.1

The Nature and Purpose of Research Study

Background:

The UK local Government wishes to provide better quality service, at lower cost, more responsibly, with a stronger connection to the client and citizen. The citizen (the consensus suggests) wants efficiency, accountability, convenience, flexibility, a sense of justice and citizen satisfaction. Citizens desire a feeling of belonging and involvement in their communities that has much to do with access to information, knowledge, communication and process.

Nature:

This is an exploratory research study to develop and propose an integrated knowledge based planning system in order to enhance the efficiency and effectiveness of planning processes. The planning system really does impact on the life of the citizen personally (as a householder with a building or development proposal), in the local context (as a resident), and more widely in terms of the physical and built environment (experienced in town and country) and in terms of spatial movement by private and public means.

Purpose:

The main purpose of this research study is to open up and explore the evolving dynamic and to propose a way to combine IM (Information Management) and KM with a more sustainable and democratic planning process. Empirical research and modelling by the researcher is suggestive of how new configurations of resources and structures could be evolved to assist in such renovation and re-profiling. This research study fits neatly into the wider debate about public policy and economic strategy in the UK at the moment.

Research Aims and Investigative Questions

The research undertaken examines the effectiveness of an integrated expert based planning system in the local government to verify a strategic model (developed as part of the project) and to answer the overall research question:

“What role does an integrated expert based planning system play in the better shaping of knowledge for sustainability development in the UK Local Government with a particular reference to local planning authority practices”?

The investigation seeks to reveal the main factors that affect the performance and management of knowledge transfer in the internal as well as the external information environment of the planning system.

The investigative questions identified are as follows:

- i. To investigate information systems and information management practices of the UK local authority's planning system to determine how they shape knowledge for sustainable development.
- ii. To assess the nature of the socio-technical system in the local authority's planning system and to show how this system supports various roles through its constituent elements (business needs, human resources, IT and socio-organisational communication) that affect the sustainable development.
- iii. To examine the extent to which the internal management of data and information contribute to the effective management of knowledge within the planning department.
- iv. To study the links between the internal information and knowledge environment with the external knowledge environments of key stakeholders to assess how they affect sustainable development.
- v. To investigate the balancing of internal and external interests in the planning system in terms of the actual and potential roles for KM.
- vi. To evaluate the implication of study findings for managing knowledge in the planning process where reciprocity, mutuality and sustainability are the key drivers of the outcomes.

Section: A-1.2

Letter of Informed Consent for PhD Field Survey

Title: Innovative communication channels, effective coordination strategy and knowledge management in the UK local authority planning department: a study of the ICTs, social interaction and the planning process.

University: School of Computing and Technology: University of West London

Investigator: Nasrullah Khilji

Supervisor: Dr. S. A. Roberts

1. The main purpose of this study is:

To explore the use of ICTS and Knowledge Management in the UK local government planning system to develop & propose an integrated knowledge based planning system.

2. Confidentiality:

I understand that the information provided by this study may be used for research purposes only, including publications in research journals. All individual information will be coded and at no time will my personal identity be revealed.

3. Voluntary Participation:

The purpose of this study has been explained to me. I understand that participation in this study is voluntary and refusal to participate will involve no penalty or loss of benefits to which I am otherwise entitled. I may terminate my participation at any time I choose, without penalty. I understand that I may withdraw from participation at any point in the study.

4. Benefits of Participation:

The benefits of participating in this study are to further future research only. The researcher at the University of West London will not receive any money or monetary benefits to conduct this study. My participation will make a contribution to further understanding of knowledge sharing in the planning system for innovative communication channels and effective coordination strategy within the UK local government Planning system.

5. Remuneration:

I understand that I will not receive any money or any other reward for participation.
In acknowledgement of informed consent PLEASE PLACE YOUR INITIALS below:

Initials: -----

Date: -----

Thank you for your Assistance!

You will be assured of complete confidentiality. The information you provide for this research study will have your name removed. You are free to withdraw from this study at any time without obligation. If you have any questions about the project, you can contact: Nasrullah K. Khilji (Researcher) 1234-758055 n.khilji@cranfield.ac.uk / nasrullah.khilji@uwl.ac.uk

Section: A-1.3

Information Sheet for Initial Interview Questions

I am very grateful you kindly agree to take part in this PhD exploratory research interview. This research study is aimed at exploring the issue of online services 'an integrated knowledge based planning system' and the extent to which it is assisting the UK local government in cutting red tape and enhancing the efficiency and effectiveness of local public services. The required time to conduct this interview will take approximately 60-90 minutes.

As it is ensured in the letter of consent, I would like to further confirm that all information, names gathered from this interview will be kept confidential and the researcher is responsible for confidentiality and data analysis for key findings.

The key questions to be discussed during this interview are as follows:

1. The previous and current work experience and roles of the interviewee.
2. Perception of interviewee from ICT strategy / e-government programme and its objectives to achieve the planning system efficiency and effectiveness.
3. The interviewee's opinion about main preventative factors and challenges of sustainable development, particularly the barriers related to political, organisational, resources, cultural, legislative, regulatory and technological aspects.
4. The interviewee's view on how and why the identified key knowledge preventative factors are occurring and how they can be reduced.
5. The supportive knowledge factors that motivate sustainable development, the motives and benefits which can make the most gain of the planning portal etc.
6. Suggestions and future plans for future planning of an integrated knowledge based system with internet 24x7 service in the UK local government.

Thank you very much once again for your participation and cooperation.

Section: A-1.4

FIELD INTERVIEW SURVEY **NO: 01** (2009 - 2010)

S. No.	Question	Yes	No
1.	Does the Council have any roles dedicated to acquiring, managing and coordinating knowledge?		
2.	Are staff coached and trained in information and knowledge skills?		
3.	Do any of the Council's leaders reinforce the importance of finding and using, creating, managing, and sharing knowledge?		
4.	Does the council's culture encourage the exchange of knowledge and learning from activities and projects?		
5.	Do job descriptions and performance assessment processes acknowledge the importance of finding and using, creating, managing, and sharing knowledge?		
6.	Within your council are there examples of matrix or partnership working that deliberately draw on diverse knowledge?		
7.	Does the council have a clear view of its key knowledge assets, and systems in place to protect these?		
8.	Does the council have a firm information management strategy?		
9.	Has the council implemented systematic processes for gathering, organising, indexing and making accessible its knowledge assets both content and people?		
10.	Does the council convert its working experience into improved processes and services systematically?		
11.	Do tools exist in the council that have further potential for knowledge organisation and access?		
12.	Has the council employed any informal mechanisms to gather and mobilise its tacit knowledge, for example, after action reviews, communities, story-telling, master classes, networking events?		
13.	With regards its vision, has any part of the organisation articulated how improved council performance and value will derive from managing existing knowledge?		
14.	Have any comprehensive area assessment inspections or reviews identified any areas for improvement where you now think that managing knowledge would make the difference?		
15.	Do you see practical improvement in your department operational efficiency and functional effectiveness because of knowledge management?		

This research survey was focused on the implementation and management of Knowledge Management within the local government planning system. The survey highlights some of the key strengths and weaknesses of local authorities encountered during the start-up phase and the on-going efforts required to manage Knowledge Management for sustainable social and economic development. The survey is focusing the council strategy for coordination, motivation and training.

FIELD INTERVIEW SURVEY **NO: 02** (2009 - 2010)

Improving effective planning systems, research interviewees were asked to identify the process used to communicate, and to identify the main issues related to planning system.

Questions	Always	Never	Sometime	Total
<u>Make awareness</u> Does Your department organise a presentation meeting within teams and the communities to make stakeholders aware of the new tools, methods or processes?				
<u>Facilitate trainings</u> Does the department facilitate trainings by working in a close collaboration with team leader to identify the key people to train for each IT tool in planning?				
<u>Support teams on tools, methods or processes</u> Does the authority support planning teams and community on tools, methods or processes? If the team or local communities require some help, does the planning IT team is concerned to the process and method in case of ICT tool concern?				
<u>Validate deployments</u> Does department benefit from a close collaboration with planning team leaders to validate deployments and ensure that the work of the local community is not affected by the new ICT tools methods or processes?				
<u>Collect feedbacks</u> Does the authority collect feedback on tools, methods and processes from the local community and to communicate them to the concerned departments?				
<u>Facilitate tests and validation</u> Does your authority facilitate tests and validations on tools, methods and processes with the local planning community, by organising meetings between the end-users (stakeholders), tools suppliers and the planning staff?				

FIELD INTERVIEW SURVEY QUESTIONNAIRE NO: 03 (2009 - 2010)

Local Council	How often do you need to communicate	Does the company has a standard procedure for internal communication between teams	How the interviewee qualify the communication within the company	Tools used within the company

Wikis, blogs, forums, Instant messaging, Webmeetings, Internal social network, External social network, Virtual work

	Preferred platform	Advantages	Challengers
Communicate about technical information			
Publish general information			
Request for help			
Meetings			
Casual communication / To reinforce relationships			

Forums, Wikis, Instant messaging, Web-meetings, Blogs

FIELD INTERVIEW SURVEY QUESTIONNAIRE NO: 04 (2009 - 2010)

Innovative communication channels, effective coordination strategy and knowledge management in the UK local authority planning departments.

Q.1: In what ways is knowledge managed between planning and development teams during application process?

Q.2: What influenced the management of knowledge during the planning permission process?

Q.3: Do you believe that different types of knowledge are available to be managed?

Q.4: Are there any types of knowledge that cannot be managed?

Q.5: How do the knowledge groupings differ from those that cannot be managed?

Q.6: Is there any knowledge management within the planning group, cross planning divisions and between these both groups?

Q.7: What type of knowledge is managed between planning group and the other departments group?

Q.8: Does the management of knowledge within planning group differ from that managed between different cross-functional planning groups?

Q.9: Is there anything about the planning structure that hindered the management of knowledge?

Q.10: How is relevant knowledge, created in the planning process, made available to those teams that need it?

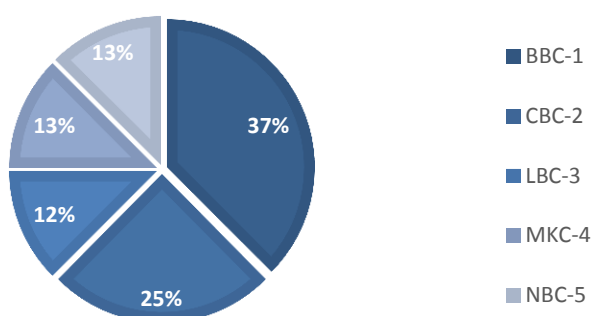
Section: A-1.5

INITIAL INTERVIEW QUESTIONS (2009 - 2010)

The initial exploratory study for process modelling is conducted through the description of the existing conceptual and theoretical frameworks. Some five field interviews were conducted to carry out the pilot study. The pilot study provided a background to identify and examine supportive and preventative knowledge factors for both tacit and explicit domains in the perspective of an integrated knowledge based planning system. This exploratory study is actually based on a comprehensive review of the relevant theoretical models and a combination of prior literature that conceptualised the technological challenges in the UK local government planning system. The five interviews, interviewees and the participating Councils detail is shown below:

S. No.	Job Title	Participating Council	Job Experience	Interview Sub Codes
1	Innovation Centre Manager	Bedford Borough Council	07	BBC-1a
2	Assistant Director Planning and Housing	Bedford Borough Council	16	BBC-2b
3	Monitoring and Research Officer	Bedford Borough Council	05	BBC-3c
4	Planning Enquiry Officer	Milton Keynes Council	03	CBC-4d
5	Development Services for Sustainability	Central Bedfordshire Council	12	CBC-5e

TOTAL NO. OF
INTERVIEWS: 08



Appendix: B-1

Section: B-1.1

Research Fieldwork Questionnaire (The Role of ICTS in Planning System)

Forward

This preliminary research survey was carried out during fieldwork after discussion with main supervisor and the staff of planning departments in five participating local councils in South East Midlands. There is subjective demand that the effective use of Information and Communication Technologies in planning system needs to be evaluated to examine the current 'As-Is' state.

The aim of the questionnaire survey was to collect data to get an idea in identification of basic issues in the use of ICTs in order to improve the delivery of excellent planning services. The research questionnaire survey was followed by further detailed questionnaire in later advanced stages of this investigation to examine the planning application submission and its advantages to the local government (i.e. Planning Portal). The questionnaire surveys were conducted in Bedford, Central Bedfordshire, Luton, Milton Keynes and Northampton planning support departments. The questionnaires were uploaded and some forth eight (48) staff members in these authorities were approached for their feedback. Twenty eight (28) staff in these five participating local authorities completed and submitted online questionnaires for data analysis and benchmarking to examine the planning system from its 'As-Was' state to 'As-Is' state.

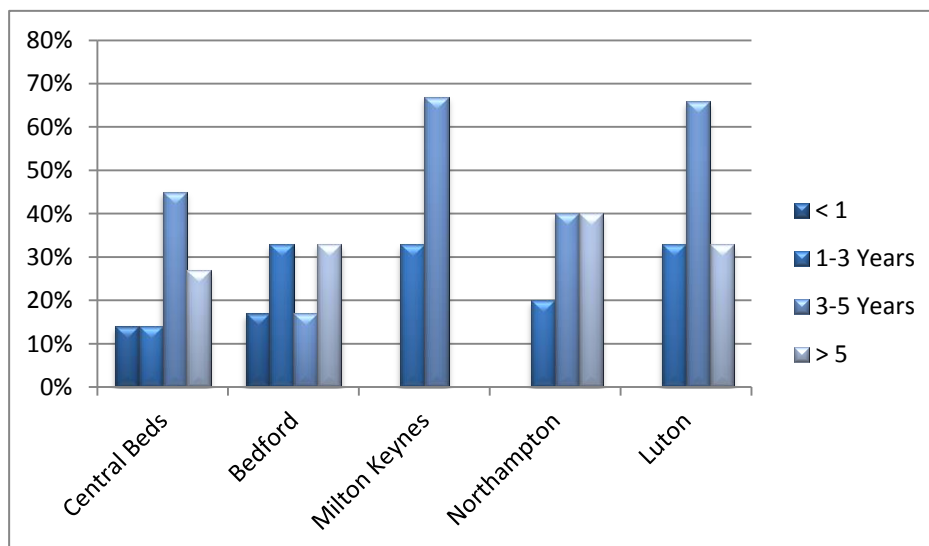
The research exploratory study basically investigates the appropriate mix of people, processes and technology in the planning process for efficiency and effectiveness by developing a 2Es Model. The survey results were helpful to be used to design and develop an integrated knowledge based planning system as well as to carry out case studies. The research survey was trying to collect data in order to do the analyses for the UK local government planning system key stakeholders by identifying key knowledge supportive and preventative factors in both tacit and explicit knowledge domains. The survey provided the evidence base for designing and verifying the research model that is helpful in setting the planning system policies for further improvements in provision of better planning service delivery. The collected data was analysed to identify key preventive and supportive elements in the reformation of the planning system from its previous 'As-Was' state to its current 'As-Is' state (Figure 6.8, Figure 6.9 and Figure 6.11).

Nasrullah Khilji

MPhil / PhD

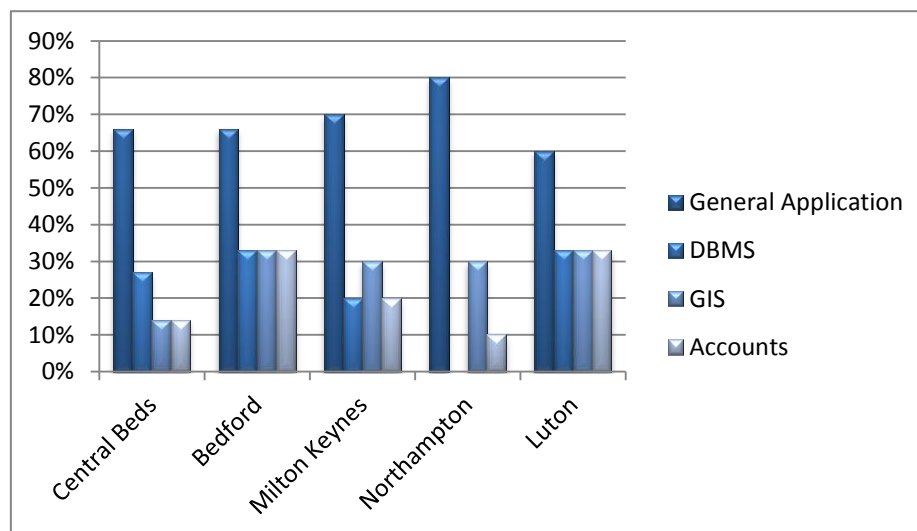
School of Computing and Technology
The University of West London

1 How long have you been carrying out this role in your job?



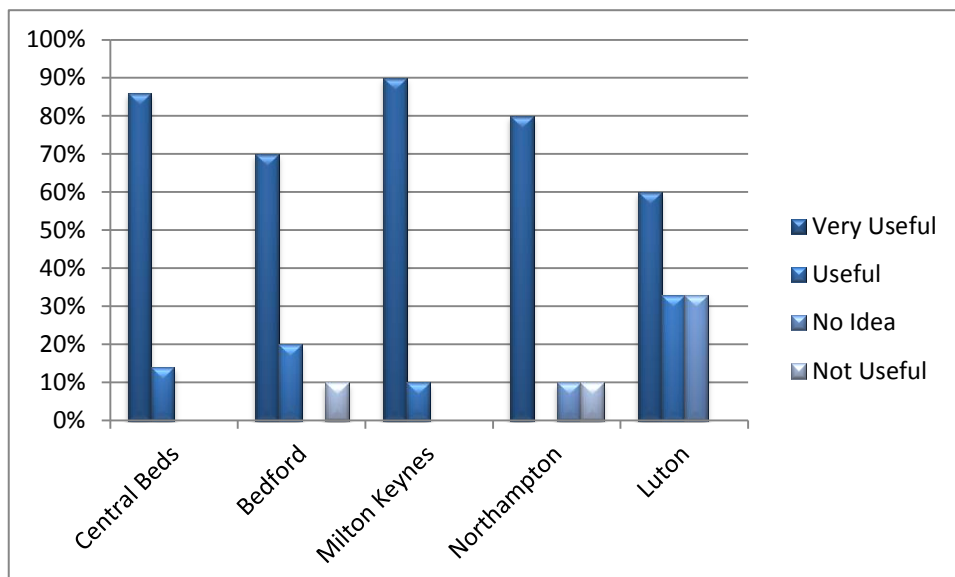
Some forty eight (48) employees in five the local participating Councils' planning departments were approached for the questionnaire survey. There were twenty five employees from the five Borough Councils participated and submitted the online questionnaire. It is calculated from the 50% responded data that how knowledgeable the planning department staff are as far as their job turnover is concerned. The experience and knowledgeable staff can better participate in the better planning services of Local Government.

2 What kind of information technology do you use while performing your job?



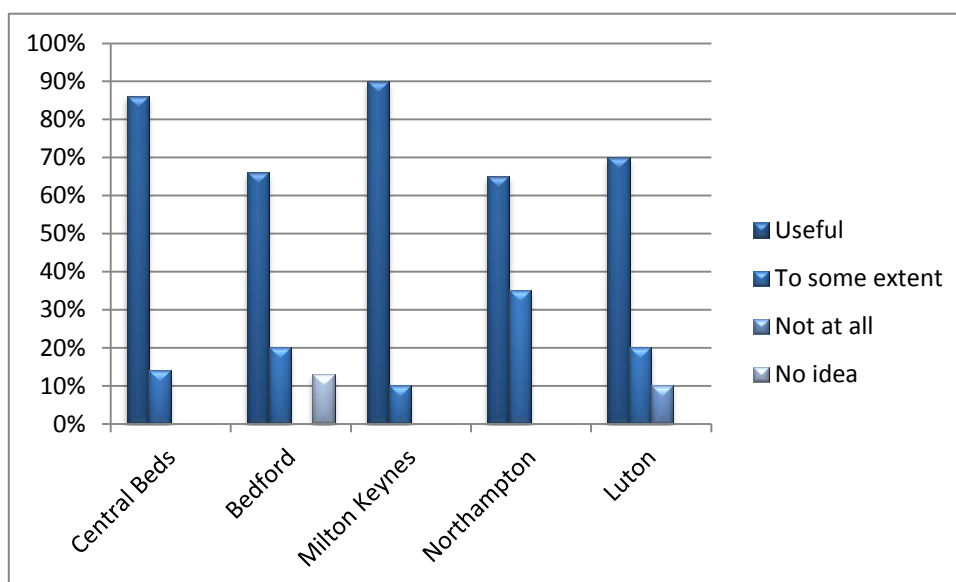
From collected data it is obvious that ICTs are still used for general applications e.g. MS Office in the Local Government Planning System. This issue needs to be addressed for better use of ICTs in the UK Local Authorities.

3 How do you rate the overall suitability of the IT you use?



Majority of participants were agreed that they find the suitability of ICTs as a very useful mean in the Planning System. They believe that IT is the need of time for innovative and efficient planning services.

4 Do you think using such technology helps you to perform your assigned duties better?



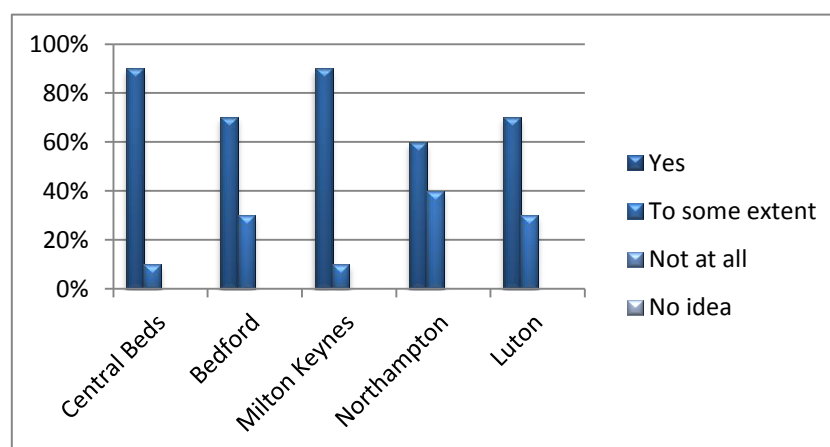
Majority of the participants find ICTs as a useful help while performing their job. It is observed that the real benefits from ICTs can only be enjoyed if planning department create an atmosphere where people feel comfortable and whole heartedly welcome the technology and innovations for better planning services to the communities.

- 5 Kindly briefly describe the use of these Technologies in your current job to perform well. (If you use several systems mention the main one; if you use more than one it would be very helpful to have comments on the others).

Planning Department	Use of Technology
Central Beds	Acolaid Planning System Database of planning applications with Enterprise workload tasks with priority traffic light system
Bedford	Mainly Microsoft Office and GIS Software
Milton Keynes	We're using ICT, so there are some teething problems, but I think it's an excellent data sharing and storage tool and there's huge potential with the discussion and meeting/GIS/MIS/events facilities too.
Northampton	Mainly Microsoft Office and GIS software
Luton	The system covers a whole range of needs from document management to bespoke applications designed by outside companies. External IT supplier product is for GIS, RDBMS, case management, report generating, web public inquiry facility.

It is once again clear from the survey that ICTs is still treated as computer applications without considering its dynamic benefits for better planning services. Some of the departments e.g. Central Bedfordshire have shown great interest in the advanced use of ICTs in planning services.

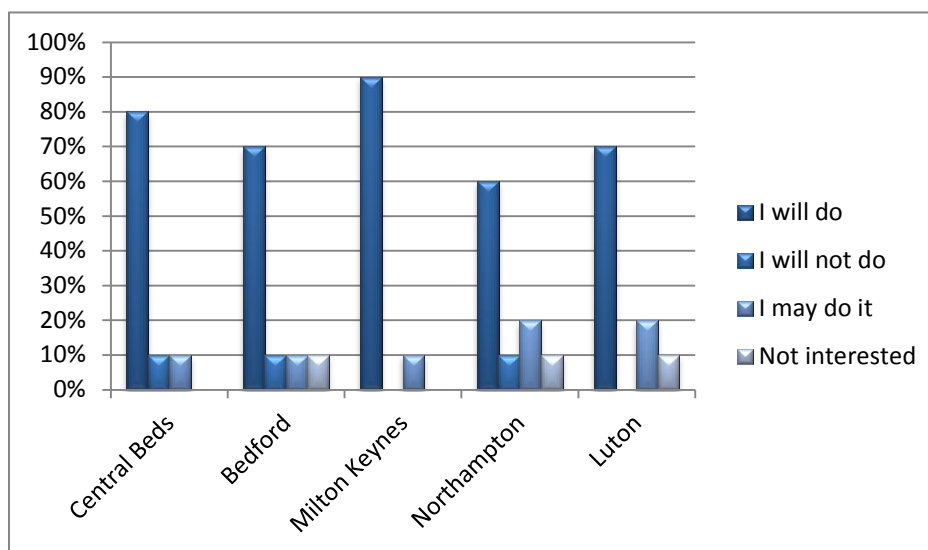
- 6 Are you satisfied with the current (IT) planning information system performance?



Majority of participants agreed that they are satisfied from the current use of IT in the UK Local Authorities but some of them would like to do more than what is currently implemented in practical sense.

7 If not, why not?
(N/A)

8 If you are asked to supervise the planning information system (use of IT) - What would you do?



It is also observed from the collected data that many of the staff in the planning are willing and interested to supervise the ICTs as administrator within their department because they find this an opportunity to further upgrade their skills and IT capabilities.

9 What do you say about the importance of Information Technology in internal communication?

Planning Department	Use of Technology
Central Beds	Very important to achieve good organisational communication
Bedford	For better and efficient management IT helps us to achieve goals
Milton Keynes	IT services play a very crucial role in the day to day activities and it is already been found very helpful here for fast communication
Northampton	IT is important in helping to speed up the consultation process
Luton	IT and web technologies are helpful

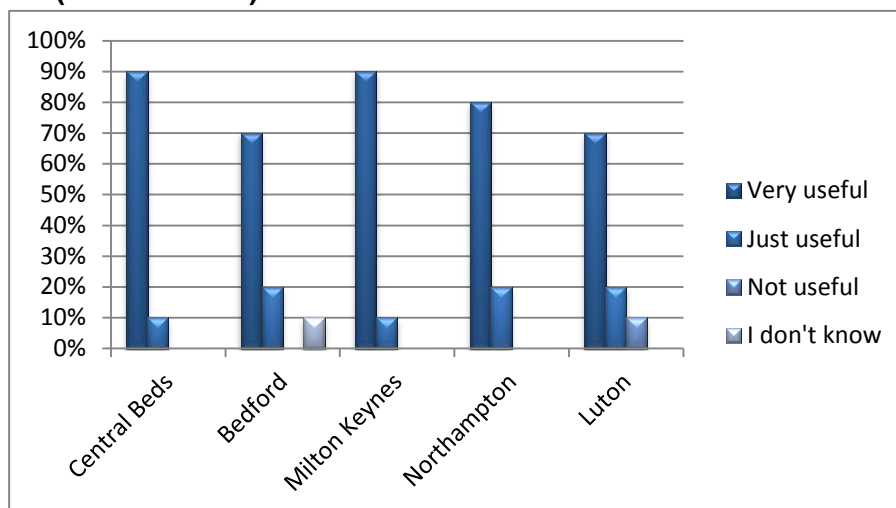
It is also obvious from the collected data that ICTs can play a key role in the better planning services if proper and healthy environment has been created, which is the need of time.

10 What do you think about the planning information system use for staff coordination? (in terms of team support and communication!)

Planning Department	Use of Technology
Central Beds	Good support with workload tasks, team performance reports, etc.
Bedford	IT helps staff in managing planning applications themselves - this is about sharing information within the service
Milton Keynes	IT supports staff for libraries of shared documents, new communications methods, better document security, which is much easier to find what you need, manage lists and diaries
Northampton	Data management and sharing with an accurate GIS Spatial element
Luton	Technology helps to a great way of sharing information among colleagues working together

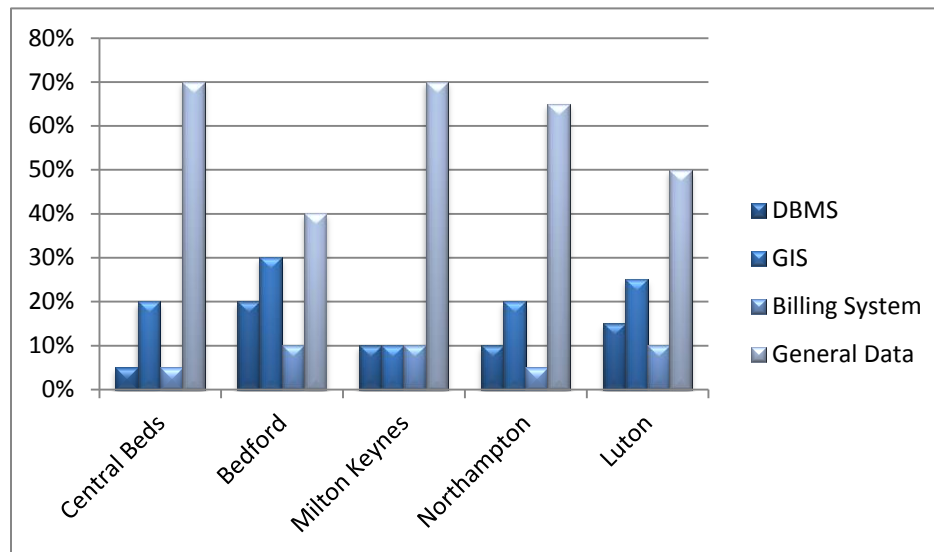
ICTs has been considered as a great help in both internal coordination and external communication tool to help planning staff to enjoy better and easy communication medium while performing their duties.

11 Do you believe that the use of IT is helpful for the General Public (Stakeholders)?



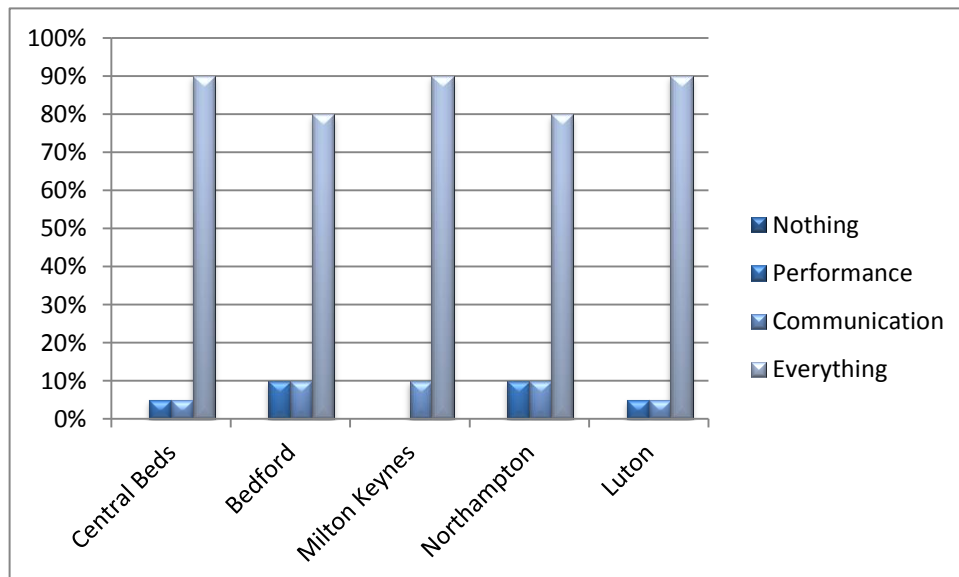
Survey data has proved that ICTs play a crucial role these days in planning for stakeholders help and support. They believe that ICTs can help to assist the general public for better and nonstop access to information as per their needs and in their own time. Online planning system is the ultimate need as stakeholders demand fully integrated and customized planning services.

12 For what application you need the use of IT in planning?



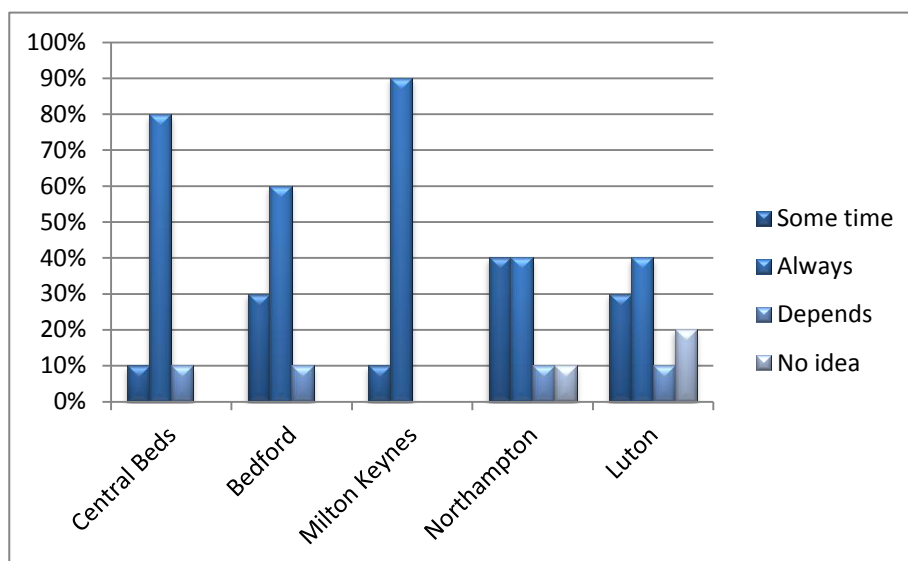
This graphical chart shows once again that many people in planning of local bodies still use IT for various general applications. Research work tried to pursue them for more advanced features and use of ICTs in planning system for efficiency and effectiveness in planning.

13 If the Information Technology in your department stops working or it is not in use any more - What effect will this have on your work?



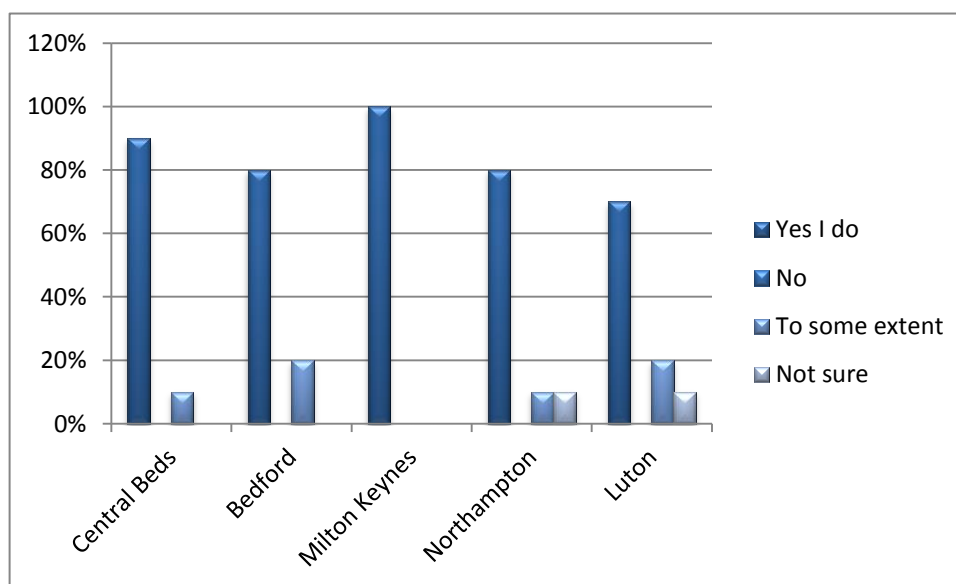
There is strong response from participants that everything would be affected if the IT in planning for some reason stops working. This proves that how ICTs has its importance to let planning staff to perform their day to day assigned duties.

14 Do you look forward to more development in the use of IT in the Planning Information System?



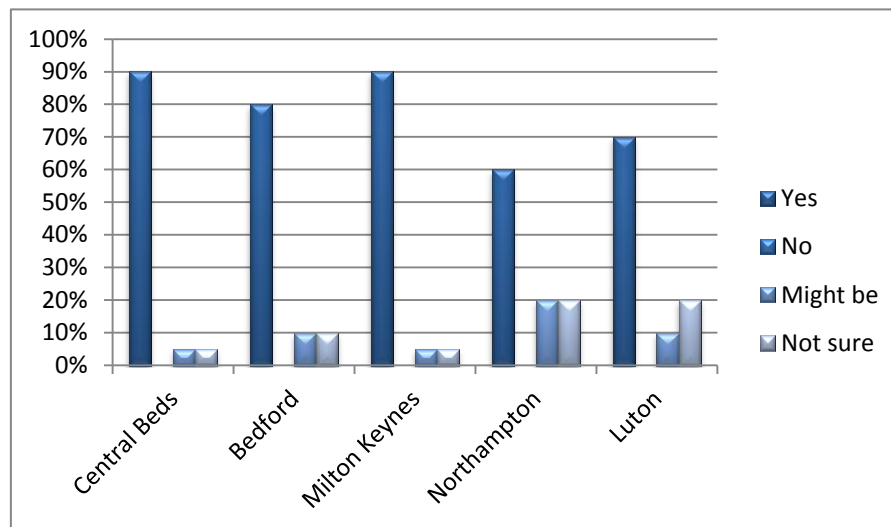
It is obvious from survey that participants would like to see more and more advancement in the ICTs for planning services. It is also vital to understand the better use of ICTs to save both time and cost in order to deliver better planning services in future.

15 Do you feel confident and comfortable while using IT in planning processes?



Majority of staff feel that they are confident and feel comfortable to use IT while performing their assigned planning job responsibilities. This also proves their trust in the use of IT to do their job both efficiently and effectively.

16 Do you use any shared resources (PC, Printers, Scanners etc.) at work?



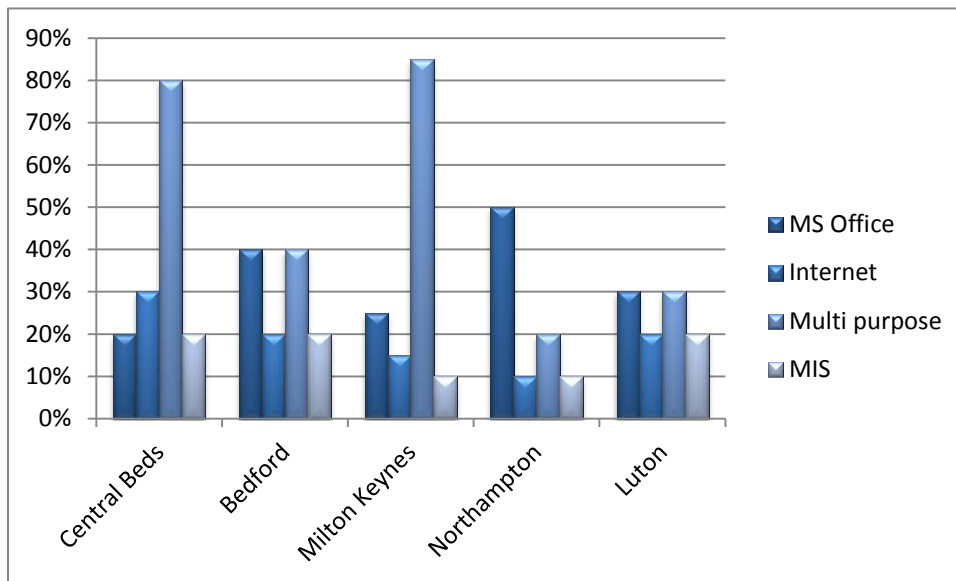
This shows that various resources are encouraged to be shared among various staff members in the planning department of these local authorities.

17 How would you like the use of IT in planning to be more helpful at your work?

Planning Department	Use of Technology
Central Beds	Further programming in Acolaid planning system to allow the display of more tasks to be completed by officers i.e. internal consultation reminders. The facility to offer more email alerts to consultees, councillors & neighbours i.e. presently send automatic email alert when an application is registered to relevant Councillor but alerts do not occur when decision is made.
Bedford	Embedded GIS and Consultation features to be added
Milton Keynes	Further advancements for an integrated system
Northampton	More effective data management/sharing with an accurate GIS Spatial element
Luton	Innovative and customized planning online system with very good workflow capabilities

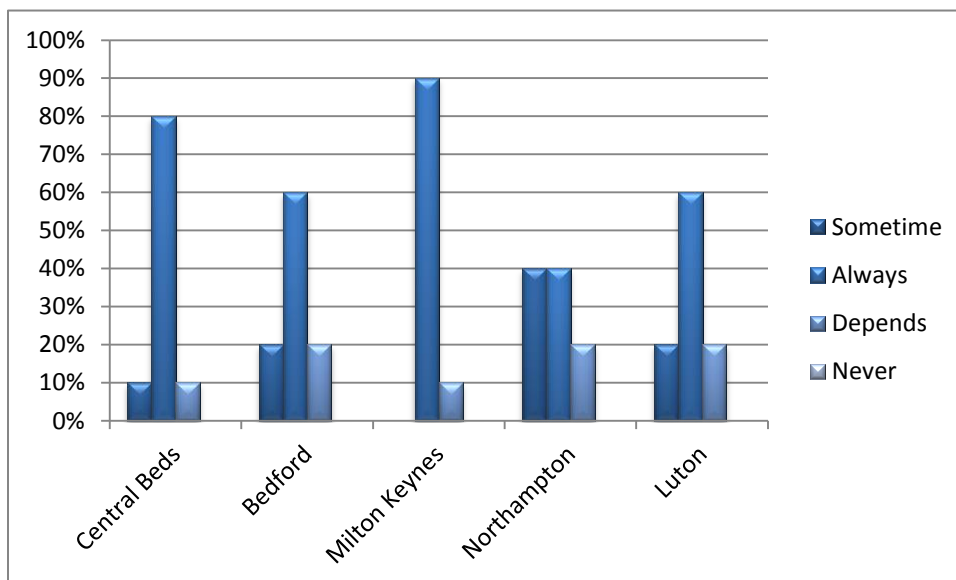
There are mixed response to this question as some of the participants are interested to see more innovation and advancement in the planning system while other would like to see a complete integration in the system. This research study basically tries to design and tests a planning solution model for an integrated, innovative and user friendly model that would address the answer for this question.

18 What do you use IT Applications for in your job?



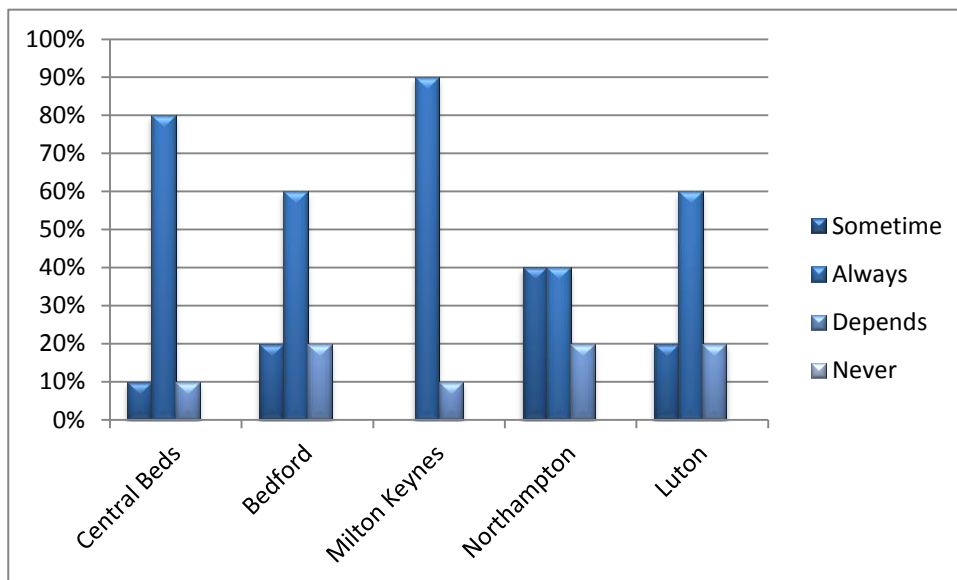
Participants deem ICTs as a useful tool in their job but they also admit that they use It for various multipurpose tasks including general application, communication, GIS, CRM, DMS and data research.

19 Do you use Government Planning Web Portals?



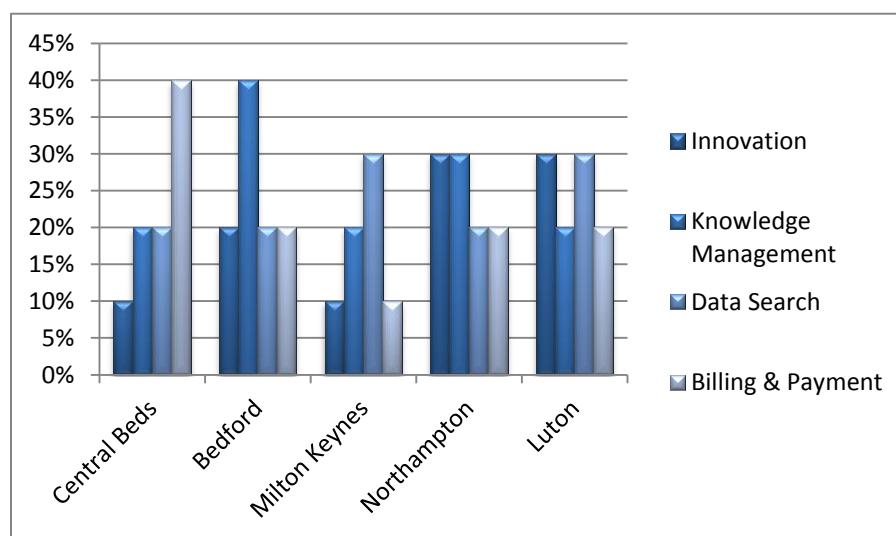
Majority of participants are agreed that prefer to use the planning portal for online planning applications.

20 Do you recommend web portals to general public for their information needs?



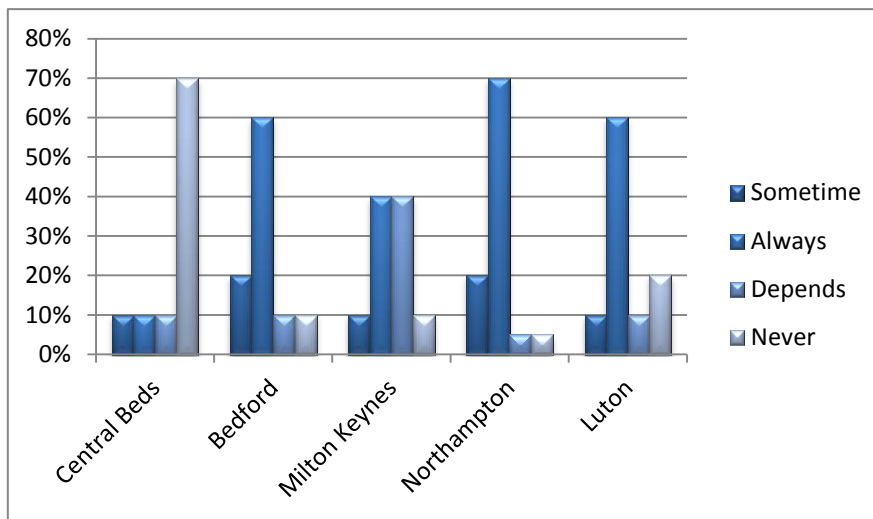
Planning staff understands the importance of ICTs and they do recommend to general public and stakeholders for their various needs and planning information.

21 What is missing in the local government planning Information System (according to your knowledge)?



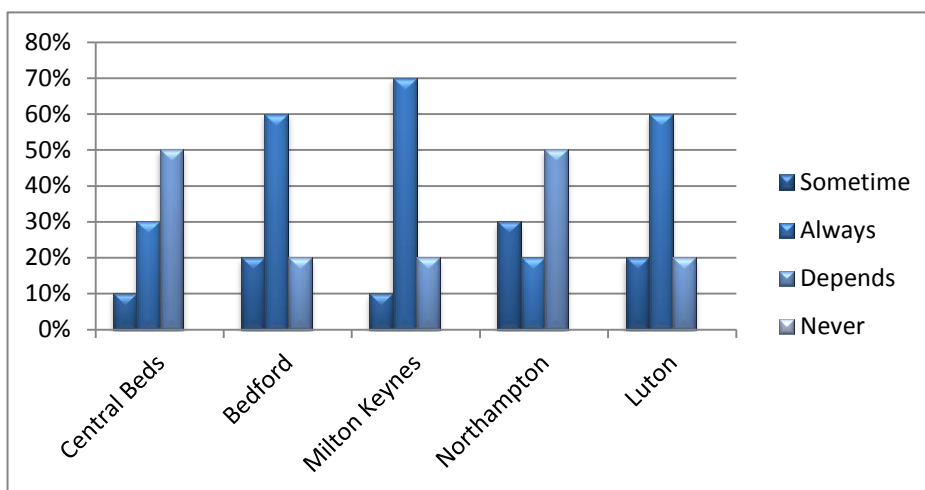
There is a mixed response from the participants that how various features are still missing in the online planning system in the UK Local Government setup.

22 Do you participate in the planning decisions?



They responded to this question based on their current job designation and the nature of job responsibilities because it is not always possible to get everyone involved in certain planning decisions.

23 Do you like the participation of stakeholders in planning process for sustainable development?



The participants do prefer the participants from the general public in various planning decision depends on the nature of planning for sustainability development.

Data Analysis

From questionnaires data analysis, it was obvious that all participants in this study were with clear interest to see improved planning processes through the use of ICTs. Some of the local authorities have already started to make changes in procedures to facilitate greater use of technology in both internal as well as external planning services. It was clear from the responses that various technologies were applied in practices to enable the delivery of online planning services to stakeholders, agents, architects, consultees, other departments etc. This may be because the planning delivery grant was more focused on citizen better services while transforming from previous 'As-Was' state to current 'As-Is' state.

From the questionnaire data statistics it was understandable that there were significant issues in planning system including people and technology. To overcome these issues there was a dire need to investigate the socio-technological system and the online planning process for better use of technologies in planning system efficiency and effectiveness. One of the main issues remained in the use of innovative electronic medium in assessing planning applications through planning portal. Some planning staff identified that the lack of a good and accurate standard view for ICTs applied by planning departments was the main reason and that's why paper copies are still requested or printed.

It is also true that some local planning authorities confirmed the lack of ICT skills amongst professional staff as a barrier making the most of the technologies. At the same time it is believed that there are still significant change management issues relating to the adoption of new technology within planning departments. This may make it difficult for some authorities to switch resources to online in support of frontline services. These issues represent a significant barrier to making the necessary changes to the procedures and processes to ensure maximum return on investment already made. Responses to the questions indicate that there is significant change management issue to be resolved to make online planning applications easier to assess. It is clear from collected data that there is up to 40% of planning application process is in place at time to take advantage of the online portal.

Those local authorities who wish to encourage more electronic consultations also need to demonstrate that they have adopted the technology fully. It is important because the stakeholders are required to use the new channel expectations as the planning authorities also want at the same time to use this channel as a primary method of planning operation. This will have significant time and cost implications for planning services as online application submission increases. It also calculated from this survey that most local authorities are not making the best of the technology investment made over the last 10 years as part of the e-government agenda in UK.

It is also observed that most planning authorities do not work fully digitised despite the heavy investment in technologies. The responses also suggest that the technology is still not good enough to be widely adopted. The main barrier is the scaling capability of the tools available to make on-line assessment as a relatively better option. Responses to the questionnaires demonstrate that there are still significant technology issues that are required to be addressed. The questionnaire survey results demonstrate that it may be sensible to carry out further research to identify and resolve key barrier to adoption of the online planning system.

Though some of the participating local authorities in South East Midlands have invested in the technological innovation to manage and provide on-line access. However, the key tools required to do what planning officers can do on paper better than on screen are either not available or not adequately resourced. This is a significant barrier to further adoption of the technology, particularly in improving the internal planning processes. It is therefore obvious that a change for a better, well customised and fully integrated knowledge based planning system is fundamental. For an integrated, customized and fully alive planning system, it is definite that further research work would be required. The fully integrated online system will ease the use of the planning services with consultation issue for better Planning System.

Observation and Key Findings

- Lack of facilities
- Non - availability of required hardware - Parish Councils in particular
- Lack of progress on corporate GIS
- Unwilling to be consulted electronically
- IT ability and infrastructure
- Resistance to IT
- Access to IT
- Technology integration
- Leadership vision
- Staff motivation and training
- Management strategies
- Red Tape Bureaucracy
- Legislation and legal challenges
- Organisational culture
- Lack of knowledge/ability
- Lack of resource on their part, i.e. ICT skills, equipment
- Traditional working methods
- Reluctance to work without paper
- Statutory consultees restrictive rules
- Systems compatibility

Appendix: C-1

Section: C-1.1

Fieldwork Surveys (Online Forums)

Planning Officers / Employees Survey

This survey is being conducted as a part of a PhD research project at University of West London, and seeks to investigate the factors that either facilitate or impede an integrated knowledge based planning system initiatives for online services.

Appropriate participants for this survey are considered to be those who are working closely in the South East Midlands local Council's planning departments.

Your response really does count and the research survey results will be available for all participants. However, as much as I value your responses to the survey, it is important to note that the participation is voluntary. The survey will take approximately 30 minutes to complete, and all responses will be treated as confidential and anonymous to protect the respondent identity in any published data.

Should you have any questions about the study, please contact the researcher, Nasrullah Khilji through the e-mail accounts given below.

Thank you for your participation

Nasrullah Khilji

E-mail: n.khilji@cranfield.ac.uk / nasrullah.khilji@uwl.ac.uk

Online Survey (PhD Field Study 2009 - 2012)

The Local Government (LG) Improvement and Development supports improvement and innovation in local government. We work with local authorities and their partners to develop and share good practice. We do this through networks, online resources, and support from councillor and officer peers. The online forums are also applied for data collection, analysis and validation during fieldwork; following are some sample screenshots examples from the IDEA and PAS online forums during the fieldwork.




Topic: The use of Information and Communication Technologies in planning

The use of Information and Communication Technologies in planning	Posted by
<p>Your input is required to collect the diverse views about the topic: what are the applications of ICT in the planning system for effective and efficient planning services?</p> <p>Thanks Nasrullah Khilji, Cranfield University, Bedford</p>	<p>Nas Khilji Consultant PEARL-UK, Cranfield University 23 Mar 2011 14:54</p>

17 replies for this posting

Re: The use of Information and Communication Technologies in planning	Posted by
<p>Hi Nasrullah,</p> <p>Many local authority planning policy teams use e-consultation systems to engage key stakeholders, planning agents, developers and local communities in their Local Development Framework activities. These systems make the collection, analysis and reporting on ideas, comments and objections a lot easier and more transparent.</p> <p>Some local authorities are also using online collaboration software to support Community Led Planning activities to help empower local communities and field officers. This obviously provides a great foundation for the government's plans for Big Society and Neighbourhood Planning.</p> <p>Both the above services can be set up to provide two-way or peer-to-peer communications networks between all those involved. Through earlier and wider engagement, planning policies and decisions should be better quality and hopefully stakeholders have a better understanding of the issues and options involved.</p> <p>There is more information and case studies etc on our web site I hope this helps.</p>	<p>XCS Director AABB Council 25 Mar 2011 09:39</p>

Re: The use of Information and Communication Technologies in planning	Posted by
Nasrullah, In Castle Point all the planning applications go onto a data base so anyone can look them up. Search by post code etc if application number not known.	ASS DD Borough Council 01 Apr 2011 11:05
Re: The use of Information and Communication Technologies in planning	Posted by
Hi Nasrullah, My team at Rother DC primarily deal with the validation of planning applications. Our ICT system is used to log all new submissions thereby making it easy for anyone in the Planning Division or our Community Help Points to search for info on applications easily without needing case officer input. In addition we have just upgraded to a new DMS system which means that all applications received electronically via the Planning Portal upload to our DMS automatically without the need for manual scanning - which can sometimes be quite a drain on resources. All documentation relating to a planning application including statutory consultation is generated automatically through our ICT system - negating the need for manual input. Our next step is to implement electronic submission of building regulation applications and mobile working - which will significantly improve our Building Control service especially in the rural area where officers will be able to access plans and data without returning to HQ. Hope this help.	ABC Admin/IT manager ASD Council 03 May 2011 10:14
Re: The use of Information and Communication Technologies in planning	Posted by
Hi Nasrullah Khilji, no one has directly commented on the use of GIS or the link between Planning information and Local /CON29 searches when buying a property, etc. We have a system which captures details of all applications to support their end-to-end processing, which also includes document management, enabling large planning documents to be received and stored electronically, but have also, for many years, captured the application boundaries and key data in our GIS system, meaning that details of the actual application location can be both viewed and used in a range of search processes, from supporting online self-service to planning details, to automating the searching and reporting required to deal with legal searches. This extends to other 'planning' related data, including things like TPOs, etc.	Angela Moore Process Design Team Leader Dudley M.B.C. 03 May 2011 15:29



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Planning Information System

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Topic

Planning Information System	Posted by
<p>What kind of information technology do you use while performing your job in Planning? Kindly briefly describe the use of these Technologies in your current job to perform well. If you use several systems mention the main one; it would be very helpful to have comments on the others.</p> <p>Thanks Your comments will help in my PHD research study (ICT in Planning System)</p>	<p>Nas Khilji Director PEARL-UK, Cranfield University 03 Aug 2010 12:52</p>

4 replies for this posting

Re: Planning Information System	Posted by
<p>Having managed and/or deployed planning systems in several authorities, you are looking at the following:</p> <p>Integrated systems with GIS, RDBMS, case management, report generating, web public inquiry facility. Example Idox (formerly Caps-ESRI) Uniform.</p> <p>Some smaller authorities use spreadsheet and paper for office admin (e.g. Excel/Access), normally with a web page content management system (CMS) to publish weekly lists, etc.</p> <p>Many authorities have EDMS, although few of them have considered the legal implications and requirements of moving to "Electronic Only" documents. Typical EDMS would be Idox or</p>	<p>Ian Parmenter Project Manager Corporate Solutions and Innovations Ltd 12 Aug 2010 14:28</p>

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Re: Planning information system	Posted by
<p>Many thanks dear Ian, It is indeed very helpful for my research field study.</p> <p>Do you believe that IDOX is the most sophisticated and integrated system in use presently? Do you also think it needs some further improvement of there is a need for more customised system that may allow online submission, publication and consultation of planning application.</p> <p>Best Regards, Nas</p>	<p>Nas Khilji Director PEARL-UK, Cranfield University 19 Aug 2010 12:33</p>
<p>Re: Planning information system</p> <p>The Uniform system is continuously updated, the version I was deploying last year, is massively different to the one that I first had management responsibility for back in 2002.</p> <p>The Env Health system market is fairly competitive, so the companies actively solicit feed back from customers (Uniform for example has a user forum for registered users), in addition to all the work done by the development team just to keep up with the rate of legislative and regulatory change.</p> <p>If you contact Idox, I'm sure they would be happy to provide you with information about their product, explaining why they think it is better than Flare, and I'm sure Civica would provide you with the reverse information.</p> <p>All the planning systems I've tripped over in the last few years are all integrated to the planning portal, so you can submit apps online. Uniform has in-house and 3rd party links for public and statutory consultation.</p> <p>As to user interface design, every public sector COTS system I've seen has vast room for improvement, but I'm kind of an extremist on UI design, and for example when I managed a 300 user base on Uniform, there where no excessive declarations from the user communities that it's UI was unacceptable.</p> <p>When I last looked the Inspectorate where getting there central consultation system off the ground, but when originally designed, it lacked a facility to mark up a plan (they expected you to print off the A0 and mail it back!), something of a massive oversight in the Requirements Analysis. (this may have been sorted by now?)</p> <p>From Cranfield, Luton Borough Council is use to have contacts with the University within the Planning Policy team. I would suggest your next step is to have a look at a couple of the systems in action, and how the DC officers and admin staff use them on a daily basis.</p> <p>Hope this helps. -Ian</p>	<p>Ian Parmenter Project Manager Corporate Solutions and Innovations Ltd 19 Aug 2010 13:07</p>



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Online Planning Application

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Topic

Online Planning Application	Posted by
Kindly review, fill and submit the online questionnaire regarding the e-planning application survey for our research study. http://www.pearl-uk.co.uk/Q2 Thanks Nas Khilji	Nas Khilji Director PEARL-UK, Cranfield University 13 Oct 2010 11:18

1 replies for this posting

Re: Online Planning Application	Posted by
The primary purpose of this research is to explore the functions of IT in the UK local government planning process. Your participation in this survey is very much appreciated. Thanks you very much for your time in completing the questionnaire.	Nas Khilji Director PEARL-UK, Cranfield University 13 Oct 2010 11:19


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Paperless offices

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Topic

Paperless offices	Posted by
Has anyone's planning office or authority investigated the potential cost / benefit of, or actually implemented, a "paperless offices" either for specific work areas (e.g. planning policy, processing planning applications) or for whole department? I am looking into the cost / benefit of this, specifically for a policy team (where I am based), but also for DC and the wider department, and would like to hear what people have found out. Can anyone offer any pointers or lessons learned? If you had some negative experiences and do not wish to post on-line, my email is gerardwoods@sthelens.gov.uk	Gerard Woods Planning Policy Team Leader St Helens Council 18 Nov 2010 13:35

4 replies for this posting

Re: Paperless offices	Posted by
To start with, there is a lot of talk of paperless, but in reality we are talking of paper-less. Here at Stroud we have implemented a service wide electronic document management system, but through multiple suppliers. We use Uniform and IDox for DM work, but Limehouse for policy. In both cases the official file is always the scanned version. We have provided dual screens to all staff so that they can see the image and any reports they are writing, or system they are inputting into. We do not expect Building Surveyors or Planning Officers to take laptops out on site with their drawings on, so paper still exists, but that's about it... all other documents are scanned and discarded, or taken directly from their electronic form straight into the system, PDFs Word, Excel, emails JPG (officer photos) are all simply filed on line and made instantly available to the public. Down side is that many more the loss of paper, and grave its touch. You can never underestimate	Philip Skill Head of Planning 18 Nov 2010 13:51

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Appendix: D-1

Section: D-1.1

Comparison Table-1

Features	Participating Council's Statement
Full utilization of existing IT systems	
Accurate or reliable data	
A mixture of electronic and paper based data	
Poor or non-existent management reporting	
Consistency between processes in different parts of the planning service	
Manual detailing standard processes	
Processes relate to and support one another	
Knowledge management in planning process and bringing staff integration	
Use of rewards	

Delivering a more customer focused service	
Providing greater certainty and speedier decisions for Customers	
Meeting the expectations of users	
Improving the achievement of specific planning targets	
Improving the consistency of decisions	

Comparison Table-2

Architecture / Structure	CBBC	BBC	MKBC	LBC	NBC
People					
Process					
Information					
Communication					
System					
Knowledge					
Technology					

Section: D-1.2

Sample of E-Mail Correspondence

From: XYZ [mailto:aaaa.bbbb@bedford.gov.uk]
Sent: 12 November 2009 15:25
To: Khilji, Nas
Subject: RE: Research Proposal Draft!!!

Dear Mr. Khilji,

Thank you for sending a copy of your minutes and the link to the initial questionnaire. Please also find below the links we discussed on the phone. The first one leads to a list of committee agendas and minutes. By scrolling down that list you will come to the Planning committee, where I hope you will find some useful information. The second link is to our Core Strategy and Rural Issues Plan page on the website. To view the document, click on the hyperlink near the top of the page. Policy CP2 refers to sustainable development.

<http://www.councillorsupport.bedford.gov.uk/ieDocHome.aspx?Categories> - Committees
http://www.bedford.gov.uk/environment_and_planning/planning_town_and_country/planning_policy/core_strategy_rural_issues.aspx - Core Strategy and Rural Issues Plan page.

I hope you find this information useful.

I have also talked with my manager Ronald McKay about the possibility of future meetings with him and due to a busy workload, have not yet looked up any secondary data. However I will endeavour to find any information you may find useful and make you aware of it.

Thank you once again for the meeting and for a copy of the minutes.

Kind regards
XYZ, Monitoring and Research Officer
Bedford Borough Council

From: Khilji, Nas [mailto:n.khilji@cranfield.ac.uk]
Sent: 22 March 2010 15:39
To: ABC
Subject: Research field work

Dear ABC,

It was indeed a pleasure to talk to you about my PhD research fieldwork and thanks for the appointment to further discuss with you.

This research will investigate the functions of information and communication technologies in the local Council Planning Process. Research work will also explore the role of knowledge management in Milton Keynes Council Planning Department to find out how technologies support the assigned tasks and how they enable knowledge to be applied during the planning development process. Would you kindly confirm me the venue and direction for our meeting on April 14th, 2010 at 14:00 hours.

Many Thanks,
Nasrullah Khilji
T: +44 1234 758055
From: ABC [mailto:abc.cba@Milton-keynes.gov.uk]
Sent: 22 March 2010 16:50

To: Khilji, Nas
Subject: RE: Research field work

Dear Nas,

I can confirm that I will be available to meet with you on Wednesday 14th April at 14:00.

The venue will be at:
Milton Keynes Council
Civic Offices
1 Saxon Gate East
Central Milton Keynes
MK9 3EJ

The Civic Offices are located next door to the Public Library in Central Milton Keynes, across the road from the Centre: MK at the Marks and Spencer end.

When you arrive at the offices please enter by the front entrance and once inside the door head right and up the set of stairs to the first floor reception. Once there please speak with the receptionists and let them know that you are here to meet with myself, they'll let me know you've arrived and I'll come meet you.

If you need any further details or directions to the Civic Offices just let me know.
I look forward to meeting you on the 14th.

Kind Regards,

ABC
Planning Enquiry Officer
Milton Keynes Council

From: MNO, PQR [mailto:m.pqr@northamptonshire.gov.uk]
Sent: 12 May 2010 11:50
To: Nas Khilji
Subject: RE: Role of ICT in Planning

Dear Mr Khilji,

Thank you for your email regarding NBC Planning Process. I have forwarded it to the relevant department, Planning Support Services, for their attention. They will respond to you in due course.

If you wish to contact them in the meantime, their contact details are planning@northamptonshire.gov.uk

Thank you for contacting Northamptonshire County Council.

Yours sincerely,
MNO PQR
Customer Service Centre
Northamptonshire County Council
01604 xxxxxxxx

Section: D-1.3

Sample of Field Interview conducted with Given Answer:

Making planning applications effective and efficient and how planners feel about efficiency in the planning system as it is continuously evolving in recent years.

XYZ, Management Support Officer and Service Development Sustainable Communities is approached in the CBC to discuss the improvement in the planning application process and how does CBC planning department cope up with the challenges of ICT and KM for better service delivery. She provided various data sources available in her department and promised that she will send the interview questionnaire at the earliest possible along with some important planning related web links. She mentioned that “We have seen the advent of the 1App system, local lists, the Planning Portal, Design and Access Statements, and the charging of fees for discharging conditions. All these were introduced with the best of intentions”. She expressed her concerns that a few years ago, lodging a planning application meant filling in at most four sides of A4, more usually two sides. Add drawings and fee and that was about it. Now the same process can fill 16 sides of A4 and take a significant amount of time to complete.

She further said that “There is more emphasis now on pre-app discussions. When they work, they can indeed save time. But as they have to take a back seat to actual applications, it can take unacceptably long to get a response. If you add the eight week statutory period and then anything up to another eight weeks to discharge conditions, getting a usable planning permission can now take many months”. She says, “Design and access statements and the various submissions to satisfy the Local List now add considerably to both the professional workload and cost of applying for planning permission. The process of simply registering an application has now increased exponentially and is generally not even done by planning officers but by more junior staff who can only apply a tick box approach without analysing true need. The bureaucracy involved in making applications is also still considerable”.

I am sure that the quality of the decision making process is now improved but the question is at what cost to society? In a recession, we need to encourage the economy, not weigh it down so that it can barely move, she says. It seems that any attempt by civil servants to improve efficiency automatically involves the Law of Unintended Consequences that makes such attempts counter-productive. She said it may be some time so frustrated with our current system, which needs ongoing improvement with the change of technological innovation.

She emphasised that it is important that technology work for the planning process rather the other way round. She said, “IT suppliers need to know the structure of local government. Local government is mostly two tier in UK. County Councils handle a lot of the bigger stuff and take a more strategic role (e.g. education, social services, highways, strategic planning functions, child care, libraries and other things). It will also have litigation and conveyancing departments in its legal section. On the other hand the District/Borough Councils are responsible for customer facing stuff like benefits, housing, collecting waste, planning applications, licensing, council tax, building regulations etc. Unitary Authorities (MBCs are like UAs) do both so they need to show that they understand this. Look up what Ultra Vires means and look up the difference between Members (Councillors) and Officers, and where IT suppliers will fit in if they get the job to do. They will need to know what services the council supplies (if it's an MBC then all of the above I listed), any modern issues/news on its website. Prepare an answer as to why they want to work in local government planning technological tools because working for the community, interesting varied work etc.

Section: D-1.4

Sample of Audit Trail (Research Progress Diary):

This M. Phil / PhD programme began with attendance on the research methods modules (60 credits) in 2007 - 2008. The proposal was submitted to and approved by the Research Degrees Sub-Committee in 2009. The field work was started by contacting the Bedford Borough Council's planning department to conduct the preliminary research work. The researcher realised within the first six months that the research field area and data collection sources were required to be expanded. By the end of 2009 and during first quarter of 2010 four more local authorities were contacted to participate in this study including Central Bedfordshire Council, Milton Keynes Council, Luton Borough Council and Northampton Borough Council.

The annual progress report for 2009 and 2010 was submitted, which was followed by M. Phil to PhD transfer report during the beginning of 2011. During the successful up-gradation the researcher continued to carry in depth research investigation among the five participating authorities in South East Midlands. The preliminary field study provided a platform to explore an integrated knowledge based planning system by evaluating the ICT strategy and innovative planning processes in local planning authorities. Information and Communication Technologies have been observed as essential tools for knowledge sharing to advance performance. The field investigation was continued during 2011 and 2012 to examine the use of emerging technologies in the UK local government planning system to deliver effective and efficient planning services. In particular, the planning reform was studied to analyse how knowledge sharing, effective coordination strategies and stakeholders' participation in the planning system has improved.

The researcher decided by mutual understanding with his main supervisor to analyse the 'As-Was'; 'As-Is' and 'To-Be' states of planning system in participating planning local authorities during 2011-2012 to explore how planning system could be further improved and moved towards smartness and sustainable development.

During this period the researcher outlined the research methodology to ensure that the most appropriate research design is considered to address the research questions in order to achieve research aim and objectives. Researcher initially summarised the philosophical positions that underlie the designs of this research study. A comparison between positivist, social constructionism, and critical paradigm was considered. A summary of the mixed methodological

approach was included to research design (qualitative and quantitative), within which knowledge was acquired. The qualitative and quantitative research methodological structure was examined for a range of research strategies. Among research strategies were: biography, phenomenology, Group Action, grounded theory, ethnography and case study. The case study approach was selected as the most appropriate method along with literature review, grounded theory and ethnography for ongoing field work.

During July 2011 to September 2011, the research continued to conduct two more interviews within the participating local authorities. Literature review, environmental scanning and case studies under an exploratory research methodology were continued with a flexible research design approach mixed research methodological approach. Data analysis was also part of the field work comprised of literature analysis, current trends and thematic analysis. Researcher decided to apply a triangulation in order to maintain the high quality research reliability and data validity during the final phase of data collection and analysis.

Researcher with his mutual understanding with main supervisor decided to examine the planning system transition from conventional to contemporary one. It was observed that how the Local Government planning system has progressed in the way of transformation from a bureaucratic environment to one in which all stakeholders including planners and applicants embrace the promise and need for an electronically efficient planning paradigm. It was also recognized that the planning system reform was a living document, which requires continuous up gradation. It was observed that since the ICT strategy is implemented the local authorities constantly reviving their structure with ongoing reforms. The local government has radically reorganized top management tier and reshaped service structures while handling a very turbulent wider economic climate that has major repercussions for the public services. A research paper was presented in the 2011 doctoral research symposium on ICT, organized by the School of Computing and Technology, Manchester University.

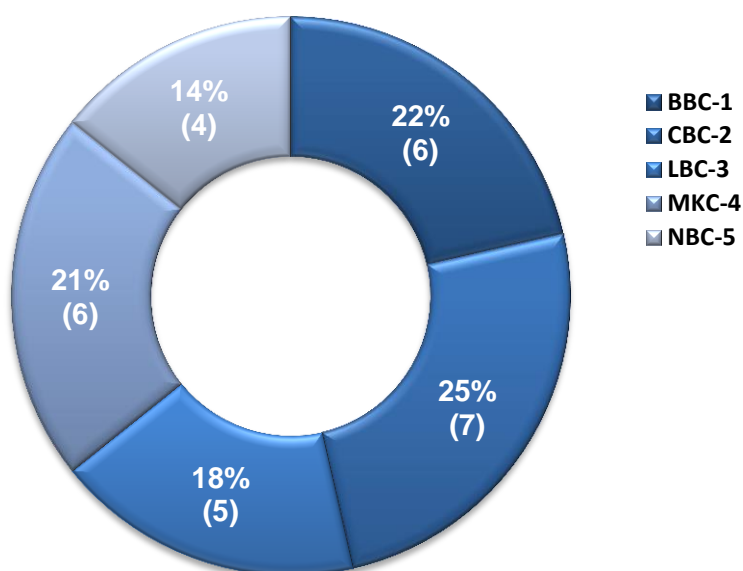
The main fieldwork was continued during 2013-2014 to carry out case studies within participating authorities. To validate the pragmatic models the researcher with his main supervisor's mutual understanding conducted a final round of survey. The research results were further evaluated during this survey from views/opinion from key participants' responses. The thesis final review and edition was completed in 2015 before submitting this to the scrutiny committee of School of Computing and Technology in November 2015.

Section: D-1.5

List of Statistical Data for Research Participation Councils

Estimated Participation	Actual Approached	Actual Responded	Participating Council	%age
10	10	6	BBC-1	60.00%
10	12	7	CBC-2	58.33%
10	9	5	LBC-3	55.56%
10	10	6	MKC-4	60.00%
10	7	4	NBC-5	57.14%
50	48	28		58.33%

Total Participation: 28



Section: D-1.6: List of Interviewees with their Job Title

S. No.	Job Title	Coding for Council	Job Experience	Interview Sub Codes
1	Assistant Director (Planning and Housing)	BBC Bedford Borough Council	22	BBC-1.1
2	Head of Planning Policy		18	BBC-1.2
3	Office Manager Planning Support Services		8	BBC-1.3
4	ICT Strategy and Development Manager		16	BBC-1.4
5	Management Support Officer - Service Development Sustainable Communities	CBC Central Bedfordshire Council	10	CBC-2.1
6	Director of Sustainable Communities		12	CBC-2.2
7	Planning Enquiry Officer		16	CBC-2.3
8	Assistant Director Policy, Partnerships & Performance		18	CBC-2.4
9	Policy Monitoring Officer	LBC Luton Borough Council	13	LBC-3.1
10	Acting Technical Support Manager & Business Process Review Project Manager Development Control		16	LBC-3.2
11	Planning Project Manager		20	LBC-3.3
12	Planning Enquiry Officer	MKC Milton Keynes Council	14	MKC-4.1
13	Assistant Director IT and e-Government		8	MKC-4.2
14	Joint Head of Development Management		12	MKC-4.3
15	Assistant Director of Planning		6	MKC-4.4
16	Principal Development Control Officer	NBC Northampton Borough Council	15	NBC-5.1
17	Head of Customers, ICT and Cultural Services		12	NBC-5.2
18	Planning Delivery Manager		10	NBC-5.3

Appendix: E-1 (Section: E-1.1)

The research applied a wide range of research methods, including unstructured interviews, structured questionnaires, constant observation, online forums and theoretical models reviews etc. This also included the literature review of emerging technologies in local government, ICT strategies, KM policies, socio-technical system, sustainable development and online planning portal to identify major themes or categories as shown in the following table. The major categories were divided into six major themes such as MC-1: Knowledge Applications, MC-2: Knowledge Channel, MC-3: Individual knowledge, MC-4: Group Knowledge, MC-5: Knowledge Preventers and MC-6: Knowledge Supporters.

These main six themes were coded with Main Code (MC), which were further subdivided into sub themes. For-Example for category six 'MC-6: Knowledge Supporters is further subdivided into five themes such as SC-6.1: Planning Project Structure, SC-6.2: Communication Channels, SC-6.3: Category of Knowledge Teams, SC-6.4: Routine Activities Schedule and SC-6.5: Training and Development. Once the major and sub categories were set up from qualitative data these were numbered to analyse the quantitative data by counting the appearance and recurrence of these terms from research methods. The major and sub categories were logged 292 time in total while the category six was mentioned only 32 time, which qualifies this category repetition 10.96%. The identified element was grouped from a diversity of views and ideas in an explicit knowledge supporter domain that would be seen at the crossroads of a number of local government public services particularly planning system for online service delivery i.e. planning portal.

This research study clearly acknowledges and highlights contextual issues and key factors that impact and influence on an integrated knowledge based planning system in the UK local government. However, research conducted requires further investigation to offer a useful and productive direction and contribution for local authorities and other relevant organisations in their future plans regarding an integrated knowledge based planning system. From mixed research methods and a wide range of prior literature including the review of six selected conceptual models with a special focus on the context of case studies in five participating councils, a list of major categories and their subcategories with their frequency in percentage is highlighted in the table below.

CASE STUDY: Allocation of Main and Sub Codes

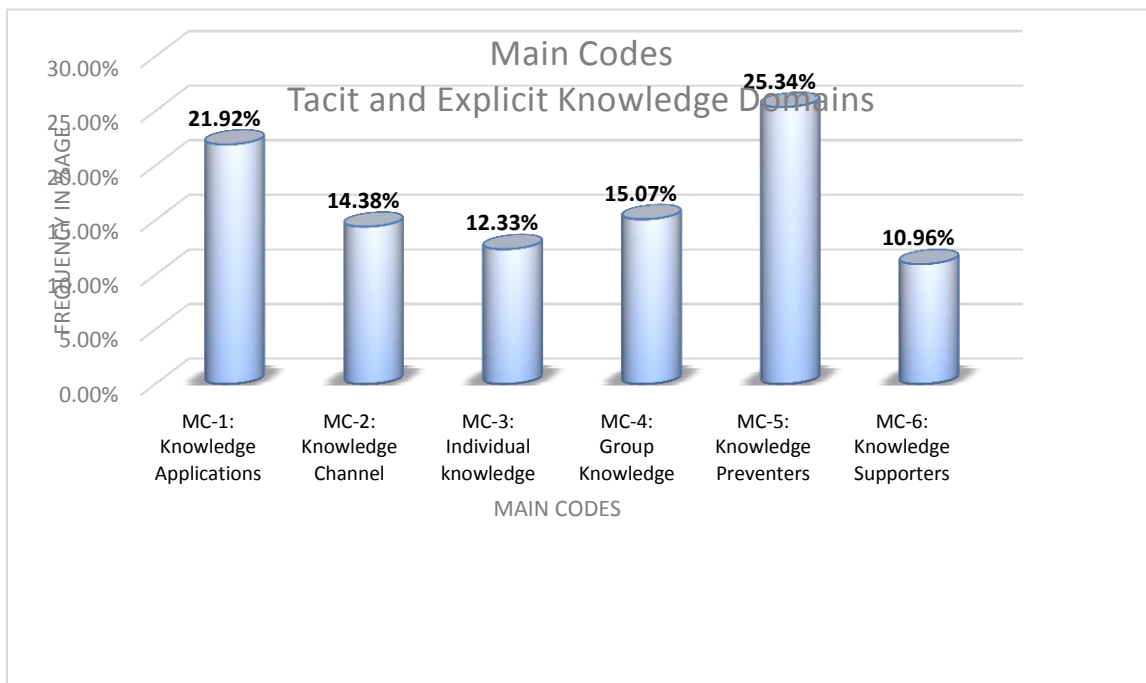
MC-1: Knowledge Applications	SC-1.1 - ICT Infrastructure SC-1.2 - Network DMS, CRM, GIS, ERP SC-1.3 - Storage and Retrieval of Data SC-1.4 - Microsoft Office Applications SC-1.5 - SMS and Smart Phone Apps SC-1.6 - Online Reports Provider SC-1.7 - Design and Plan Review SC-1.8 - Technical Specifications	64	Explicit - Supporters	21.92%
MC-2: Knowledge Channel	SC-2.1 - Face to Face Meeting SC-2.2 - Team and Group Working SC-2.3 - Creation of Knowledge Models SC-2.4 - Use of Smart Devices i.e. Wiki	42	Tacit - Supporters	14.38%
MC-3: Individual knowledge	SC-3.1 - Sharing Individual Expertise SC-3.2 - Motivation and Willingness to share knowledge SC-3.3 - Strategy and Vision	36	Tacit - Supporters	12.33%
MC-4: Group Knowledge	SC-4.1 - Planning Teams Coordination SC-4.2 - Team Relationships SC-4.3 - Creation of New Knowledge	44	Tacit - Supporters	15.07%
MC-5: Knowledge Preventers	SC-5.1 - Non Sharing Knowledge SC-5.2 - Lack of Awareness SC-5.3 - Organisational Culture SC-5.4 - Political Uncertainty SC-5.5 - Time Factor SC-5.6 - Financial Constraint	74	Tacit - Preventers	25.34%
MC-6: Knowledge Supporters	SC-6.1 - Planning Project Structure SC-6.2 - Communication Channels SC-6.3 - Category of Knowledge Teams SC-6.4 - Routine Activities Schedule SC-6.5 - Training and Development	32	Explicit - Supporters	10.96%
		292		100.00%

S. No.	Research Participating Council	Code	No. of Interviews	%age of Interviews
1	Bedford Borough Council	BBC-1	4.00	22.00%
2	Central Bedfordshire Council	CBC-2	4.00	22.00%
3	Luton Borough Council	LBC-3	3.00	17.00%
4	Milton Keynes Borough Council	MKC-4	4.00	22.00%
5	Northampton Borough Council	NBC-5	3.00	17.00%
	Total Number of Interviews		18.00	

Appendix: E-1 (Section: E-1.1A)

Frequency of Knowledge Tacit and Explicit Domains	
Main Code	Frequency of Repetition
MC-1: Knowledge Applications	21.92%
MC-2: Knowledge Channel	14.38%
MC-3: Individual knowledge	12.33%
MC-4: Group Knowledge	15.07%
MC-5: Knowledge Preventers	25.34%
MC-6: Knowledge Supporters	10.96%
	100.00%

Descending Order of Tacit and Explicit Factors	
Main Code	Frequency of Repetition
MC-5: Knowledge Preventers	25.34%
MC-1: Knowledge Applications	21.92%
MC-4: Group Knowledge	15.07%
MC-2: Knowledge Channel	14.38%
MC-3: Individual knowledge	12.33%
MC-6: Knowledge Supporters	10.96%
	100.00%



Appendix: E-1 (Section: E-1.2)

Key Attributes	Bedford - 'BBC'	Central Bedfordshire - 'CBC'	Luton - 'LBC'	Milton Keynes - 'MKC'	Northampton - 'NBC'
Previous State	Bureaucratic Under pressure Inefficiency Data errors Lack of access Time consuming Expensive Ineffective case tracking	Slow process Time consuming Inconsistency Data errors Lack of follow up Weak coordination Job backlog No follow up	Lengthy procedures Ambiguity Ineffectiveness Lack of control Low services Work pressure Unequal allocation of resources	Number of complaints Deficient feedback Lack of monitoring Inefficient service delivery Missing of interactive factor	Conventional Inconsistency in data processing Inefficient service delivery Red tape Lack of control Lack of motivation Missing ICTs
Key Preventers	The organisational culture Leadership vision and strategy ICT challenges Stakeholders' resistance Security challenges Intentional or unintentional confidential data loss Code of Conducts Lack of Coordination No Motivation	IT training and literacy Political will Financial constraints Lack of motivation Resistance to change Lack of qualified and skilled human resources Interoperability and multiple service delivery channels Digital divide Huge size of backlog	The integration of different systems Linking documents with the CRM, GIS, ERP Systems Consolidating the scattered data Providing planners with a unified view over their performance Changing the local government's work culture Lack of motivation	Resistance to change ICT Infrastructure limitations Constant changing of rules Operational costs KM training and staff motivation Lack of coordination strategy No confidence in mobile and cloud computing applications Shortage of required training	Process Transparency Transforming attitudes into becoming more customer-service oriented Unreliable internet services Networking Large number of stakeholders involvement Financial cost Red tape bureaucracy ICT infrastructure
Key Supporters	Virtual Working Enhancing local government performance	ICT networking infrastructure Placement of online internet based processes 24/7 data accessibility for	Up-to-date database Efficient system Computerized	Multi-channel Access to Services Reducing administrative	Providing a quick and easy complaint procedure Generating useful

	Consolidation, integration and aggregation of data Providing accurate, up-to-date, and timely data, information, and statistics Paving the road for further inter government projects Error-free data accessing and forms processing	planning application submission and tracking progress Access to personal information Huge public and local government savings Guidelines, rules and interactive online help and customer support	application Monitoring, control over the project and online help and supports Formation of a knowledge sharing environment Establishment of clear and neutral processes Altering choices available after submission System integration	burden Raising the efficiency and effectiveness of planning system Complete transparency Re-engineering planning services and processes Developing a case management system Introduction of new service delivery channels	statistics Direct delivery of complaints to authorized representatives Integrating different communication channels Initiating call centre with low cost call fees Reduced bureaucracy Visionary leadership Strong coordination
Sustainable Development	High levels of satisfaction Smooth operation of the system Specialised training Maintaining databases Outsourcing Return on investment (ROI)	Virtual meetings and virtual workspaces Low running cost of the system Outsourcing Collaboration and consolidation across Council Socio-Technology	Public-private partnership model Constant upgrading of planning portal Experience in the business model formulation and implementation	Computing as a utility service always available Updated information systems Specialised training Maintaining database	Easy-to-access information channels High levels of satisfaction Smooth operation of the system Awareness and media campaign

Appendix: F-1

Section: F-1.1

Code	Statement 'Q-2'
FS-I-01	<i>Being the Head of ICT Strategy, is a challenging position for data protection and technical security as well as physical services for various activities. I look after both operational and strategic responsibilities but recently I am very much around the operation site for arranging all physical information as a vehicle to develop single view of the information management.</i>
FS-I-02	<i>My role and key responsibilities are into the strategic direction of the Council and I look into the overall e-government policy and procurement strategies to reduce cost to work out for improved and better coordination strategy.</i>
FS-I-03	<i>I am responsible for ensuring the use of ICT is aligned with the Council's core values and corporate aims and objectives and the Community Plan. I have to make sure that ICT supports all services within the Council. I am also responsible for secure commitment from members and officers at all levels to an agreed vision of service delivery including the type, scope and the way in which system is implemented and supported.</i>
FS-I-04	<i>I am responsible as a Planning Officer with a wide range of experience in Development Control to be able to work on my own initiative and as part of a team. I have experience in a broad range of planning applications and I am involved in managing, developing and motivating teams to achieve their objectives for sustainable development.</i>
FS-I-05	<i>I am responsible for the Customer and Cultural Services Teams which incorporate ICT, Print Services, Customers Services (Contact Centre and One Stop Shop), Town Centre Management (Markets, Car-parks, Events and Business Improvement District) and Museums and Heritage. (Museum and Art Gallery and Abington Park Museum).</i>
FS-I-06	<i>I have a lot of cross over responsibilities with the Head of ICT and I work together with the Head of ICT, I look into the IT security and protection (ITSA), I am also responsible for consolidation, data management and coordinate the networking and statutory returns to the council.</i>

Code	Statement 'Q-3'
FS-I-01	<i>In general terms as a senior management group member, we understand KM as a key term to maximise the value of services for better customer services and to save money for the council.</i>
FS-I-02	<i>We believe in knowledge management, which is about ensuring that the</i>

	<i>realistic information is available to people in right order for right reason at the right time. This includes making sure that the right practices are in practice on the best available evidence by undertaking and supporting research activities, such as users' survey about a child that has local council advantage.</i>
FS-I-03	<i>The term KM in our council, in the context of planning and development, is based on local aspirations to deliver fast, accurate and timely information in a wide variety of inter-related areas that affect the core infrastructure of the community and as such will promote and sustain social inclusion, breaking down barriers, using modern technology, but the underlying key theme is a partnership approach, sharing the benefits and cutting the costs for the greater good of the community at large.</i>
FS-I-04	<i>KM is a set of techniques, tools and activities focused on helping organizations capture and communicate their resources, tacit and explicit perspectives and capabilities, data, information, knowledge and maybe wisdom. In many cases, KM has taken on the aspect of a bundle of software programs and other information technologies.</i>
FS-I-05	<i>According to my understanding knowledge management is the systematic management of an organization's knowledge assets for the purpose of creating value and meeting tactical as well as strategic requirements; it consists of the initiatives, processes, strategies, and systems that sustain and enhance the storage, assessment, sharing, refinement, and creation of knowledge.</i>
FS-I-06	<i>I believe that KM enables information to be held, shared, and catalogued for better service delivery. Knowledge Management not only provides quick access to information through a comprehensive search engine but also allows information to be stored in compliance with the latest government metadata standards for improved council services.</i>

Code	Statement 'Q-4'
FS-I-01	<i>In our Council, the training is provided in a professional group (silos) or specific skills that are very much around the team specific requirements. The more relevant training is around the participants assigned duties awareness and responsibilities e.g. training for data protection is only relevant to the concerned team. This area needs attention but currently the training is conducted as a conventional class based training like a workshop but may vary depending on the nature of training.</i>

FS-I-02	<i>I would say, this is an area which needs more attention but I think there are trainings but in silos, which does not necessarily represent the overall Council needs. We have realised a need to have a strategic training officer to find out what training is needed. For example how to use the Share Point to join the system together for better policies.</i>
FS-I-03	<i>It is an important area of our senior management concern to make sure all our staff and team members are given induction training and they feel confident to perform their jobs.</i>
FS-I-04	<i>I believe there is a need for more specialists and collaborative training. Although experienced people who understand local service delivery, we apply software, cloud-based services and outsourcing to facilitate, improve and wholly transform a wide range of customer business processes.</i>
FS-I-05	<i>Staff training and mentoring is an important issue to create awareness among people to share their expertise in order to improve the Council services to serve local communities better.</i>
FS-I-06	<i>The Council has not invested the time to let people to learn things such as Share Point for better understanding and how the knowledge holds and shared. I suppose there is greater need for continuous learning and training culture.</i>

Code	Statement 'Q-5'
FS-I-01	<i>Yes it does, there is a role to look into the customer needs and the role to look for more operational activities and data files. These roles are dedicated to try understanding the role-assigned responsibilities i.e. shared data to understand what we are getting from the data we gather from the customer.</i>
FS-I-02	<i>The only post I can pick out is about the one recently advertised i.e. Information Governance Management, which is in process. Apart from this I cannot see a specific and particular post except the relevant post of information officer.</i>
FS-I-03	<i>I believe we have already spent a lot of time looking at what needs to be done and deciding which positions we would use for KM. We indeed wanted to achieve an appropriate level of quality and consistency for our stakeholders, as practically as possible and to introduce a Steering Group to help in knowledge sharing and good governance for better coordination.</i>
FS-I-04	<i>The transfer of Luton's ICT service to the partnership provides a strong basis for creating IT-based savings and at the same time seeking improved service delivery to meet local residents' current and future needs.</i>

FS-I-05	<i>Yes, I agree that there is a need for specialised posts at our Council because it has been realised that the knowledge worker performs work that involves the generation of constructive knowledge by means of accessing data, personal information, external and organisational knowledge.</i>
FS-I-06	<i>I suppose the KM dedicated roles have a specific duty to ensure that the Council, its officers and its elected members maintain the highest standard of conduct in all they perform on day to day basis. This Council has considered to have dedicated roles in future for knowledge management.</i>

Code	Statement 'Q-6'
FS-I-01	<i>I would like to say yes, because there is a lot of conversation among the senior level management around the need for KM and how best to achieve the knowledge. It is already beginning though the momentum is slow but the executive management is already moving to the next level to understand the services to the customers and communities.</i>
FS-I-02	<i>One of the examples I can give is the wiki, as we use wiki to document data and in terms of the leadership it is not as strong as it should be and I think this new post of Information Management will be a beneficial for social mapping.</i>
FS-I-03	<i>Because of the leaders' reinforcement strategy it is possible to identify and manage knowledge in our council. As part of newly acquired Document and Content Management System, which includes workflow processes, there is the addition of a corporate Document Image Processing System. This will initially be used to aid Risk Management and eventually be fully utilised at a departmental level to aid business processes.</i>
FS-I-04	<i>I suppose in the current information age and knowledge economy, it is becoming increasingly necessary for local government to generate and utilise KM to obtain a competitive advantage and function efficiently.</i>
FS-I-05	<i>It is already realised at our council that leadership qualities are necessary for promoting and encouraging the importance of KM. This Council leadership has the desire to encourage a culture to reinforce the importance of knowledge sharing by creating a common vision with shared values.</i>
FS-I-06	<i>The senior leadership in this council has determined the policies, strategies, and structures that translate guiding ideas into effective decisions for sustainable development. This council is also creating effective learning processes which will allow for continuous improvement of the policies, strategies, and structures.</i>

Code	Statement 'Q-7'
FS-I-01	<i>Yes I would say; it does sometimes, though it is challenging, but once genuine lesson are learnt they can be applied to improve delivery of services. I suppose the knowledge is actually derived from an individual's use of information combined with that person's experiences.</i>
FS-I-02	<i>Yes, but there is a more need to take some staff out from silos to build their capability to recognize the opportunities for discovering and sharing knowledge. The council culture is required to promote, harness and manage the knowledge management practices. In terms of changing the culture there are day-long workshops for senior middle managers for better IT, communication and management skills for performance improvement</i>
FS-I-03	<i>The answer is 'yes' our Council does and the senior management has realised the importance of knowledge sharing culture to learn from experts in an open knowledge sharing environment. This Council has had a corporate Intranet in place for almost 7 years. This is now evolving into departmental portals by the use of a corporate Content Management System.</i>
FS-I-04	<i>I believe organisational culture is an essential factors to encourage the sharing of knowledge in the local authorities in order to enhance efficiency. Efficient and effective achievement of local government outcomes by local communities' services depends on the capabilities of their citizens.</i>
FS-I-05	<i>Yes, it is the practice at this Council to learn from day to day projects and to learn lessons from mistakes and share individual experiences through intranet. At our Council we do believe the organizational culture determines values and beliefs that are an integral part of what one chooses to see and absorb.</i>
FS-I-06	<i>I think, it is essential to describes culture as 'the way it is around here at our Council' to promote open knowledge atmosphere. I believe it is important to note that planning processes are not independent and all of them are affected by countless factors within the local government setup.</i>

Code	Statement 'Q-8'
FS-I-01	<i>I would say it will depend, if someone is explicitly dedicated for the KM job. I would be surprised to see in other way round. I suppose, if the job specification is around knowledge then it can be monitored but categorically I cannot say yes or no but it may be based on operational management and strategic planning of the Council.</i>
FS-I-02	<i>I would say it should be as aspect of the appraisal policy of the Council but I am not very much aware of the number of competence checks we use more specific to KM. But in general term 'yes' we use OUSIS for SMART targets that can be achieved to be measured. The Council conducts every six months a performance review but in small team it may be more frequently.</i>
FS-I-03	<i>I suppose the ICT is changing the picture within local government there is an unprecedented amount of change impacting upon the ICT provision, including the e-Government and Service Transformation agenda, Local Government</i>

	<i>Review process. In our Council a strong drive and serious initiative has been taken to achieve the excellent rating on performance of quality service delivery.</i>
FS-I-04	<i>It is evident that most Council and local government organisations now follow a businesslike approach where the focal point of service provision is responding to public needs and providing integrated and comprehensive service delivery for better customer satisfaction. Consequently, the local government sector is accommodating the KM concept as a means of attaining a competitive edge, by using the human and intellectual resources within their Council's operation.</i>
FS-I-05	<i>I think there is room for improvement as KM practices are not still taken to an advanced level at local government in the same way as in the multinational organisation. As the local authorities are improving its various processes it is essential to develop and implement performance measurement tools.</i>
FS-I-06	<i>I suppose performance assessment and capacity building, which is central to organisational performance, requires a systematic management approach to learning and development as an integral part of workforce planning to identify, integrate and share their knowledge.</i>

Code	Statement 'Q-9'
FS-I-01	<i>I think there is an initiative called 'troubled families' to assist and share information with the view to improve the outcome of all such families and as most local authorities would like to share and partner with organisations such as in public health. I believe it is a matrix approach to develop partnership working environment for sharing knowledge and expertise. Collaborative leadership indeed involves creating shared vision, purpose, outcomes and values across organisations by building trust, sharing influence and solutions.</i>
FS-I-02	<i>Yes, there are but I would say like project management, for-example, a necessary project requires identifying what is expected and the compliance required with much more intelligent systems. With regards to the project if there is a need for innovation that is more internal to the system for requirements would be development, it does not come as a beauty kit but we need to identify what is required. In the past IT was expected to provide our needs, but now we work around our needs using technologies to meet these needs with collaborative and partnership working in place.</i>
FS-I-03	<i>I think the current technological development is focused on the E-Government priority, with outcomes and targets to improve public access to services and create more efficient back office processes. To achieve such a strategic outcome requires to facilitate flows of knowledge within and between planning department. To achieve effective coordination also requires a strategy that can be applied as a guiding text book document, teaching aid or as a series of individual practices to draw and meet a corporate knowledge sharing system.</i>
FS-I-04	<i>I think collaborative leadership involves creating shared vision, purpose, outcomes and values across organisations by building trust, sharing influence</i>

	<i>and finding solutions when starting from different viewpoints or priorities. Collaboration and partnership is making us able to significantly reduce the amount of paper in the office, and subsequently the amount of space needed.</i>
FS-I-05	<i>I suppose an effective KM strategy requires long-term commitment from all Council members. It is important to be receptive to changes in both the internal and the external environment and to encourage leadership that demonstrates an enthusiasm for improvement. As far as I know there are some practices to share/ transfer expertise i.e. portal, repositories, databases, documentations etc.</i>
FS-I-06	<i>The effective flow of knowledge is only sustainable through people. When the people dimension is raised in knowledge management, it is often in the context of the human or technological interface and in the capturing and sharing of information within and outside the organisation. I think the matrix can clearly assess and indicates the better achievement of KM processes. I suppose that partnership can act as the “Result finder” to develop change in the processes.</i>

Code	Statement ‘Q-10’
FS-I-01	<i>The process of KM is still evolving but it will depend on the assumptions we make. But I would say knowledge could be a KPI with mid-term reviews to identify the issues. To my understanding it might be easy in case of explicit knowledge but implicit knowledge needs to be understood in context. The Council has not reached to that stage yet.</i>
FS-I-02	<i>We do have an internal audit department, to make sure the systems are doing appropriately in accordance with their assigned tasks. This is done at the micro level rather on macro level. I would say it is not systematic at all but as the IT goes forward we need to find what we support and how we can provide the right technology for knowledge sharing such as our CRM based on Microsoft SharePoint.</i>
FS-I-03	<i>I think this Council has a very positive approach towards KM audit and measuring the application of knowledge and expertise. The senior management is delighted with the outcome of their accreditation, which is strongly regarded as an indication of the effectiveness of the Council services but it is recognised that the Accreditation is not the only “weapon”; the greater need is to ensure that their procedures and services are consistently maintained at a high level.</i>
FS-I-04	<i>I think this is another area of concern but we at this Council understand that knowledge audits are usually conducted as part of the planning phase to develop and implement knowledge management initiatives. Within this framework, a completed knowledge audit should be used to inform decision makers about how / when / where to proceed and which areas should be prioritized.</i>
FS-I-05	<i>I believe knowledge audit can help us to know how KM facilitates better decision making, more collaboration, restructuring of organisational processes and a decline in the duplication of work, consequently cutting operational costs</i>

	<i>and improving service delivery. I think we can also get benefit from it by knowing how KM increases the financial worth of any local Council while understating how knowledge sharing creates value in an organisation and strategically enables a competitive advantage.</i>
FS-I-06	<i>To us a knowledge audit is an ideal tool to use as a blueprint for moving forward in developing our ICT strategy and knowledge management practices, but to take advantage from knowledge audit at this Council there will be a need for formal measure and audit in future.</i>

Code	Statement 'Q-11'
FS-I-01	<i>No, I don't think so; I suppose it is still too early to say. It is around the common understanding what knowledge is and until this time the common understanding about KM is clear but it is within the individual. Once we reach this stage then that will be the time to have clear a rather better idea about knowledge and intellectual assets in the local government.</i>
FS-I-02	<i>'Yes' and 'no': 'yes' in the sense of IT as a techno-centric perspective of KM while the people aspect is a manual one where we can share expertise that needs to be digitised. I believe we still have an Excel Culture where people put data on Excel sheets that is never used.</i>
FS-I-03	<i>It is an interesting area but I think we are still at a premature stage of KM, though the Council is awaiting the progress of national project work as there is no ratified standard as yet to support service development and delivery. However, it is recognised as a key element to e-Government to pursue this in the future.</i>
FS-I-04	<i>I think it is in place at our Council but only at senior level management and there is still a wide gap to make intellectual assets a much recognizable term within the broader perspective of the Council. Senior level managers consider intellectual assets and knowledge based capital to be vital for sustained viability and long term strategic goals.</i>
FS-I-05	<i>I believe there is clear view about intellectual assets and the importance of effective decision for sustainable development, but I also think there is still a greater need for broader understanding about the value and concept about knowledge and intellectual assets at our Council.</i>
FS-I-06	<i>I suppose basically, knowledge or intellectual capital includes two elements; intellectual assets and human capital. Intellectual assets are the things that we have identified and recorded. Top of the list are the traditional intellectual property rights such as patents, trademarks and designs. In my understanding I think it is the human capital which often remains untapped. Human capital does not belong to any organisation and it leaves when people do unless it is captured and codified in a way that is useful.</i>

Code	Statement 'Q-12'
FS-I-01	<i>I think we need to adapt to many changes in the world around us, from advances in planning process and sustainable development procedures to the effectiveness of administrative innovations such as customer care (CRM) and the invention of new information technologies (ICT). In order to mobilize key knowledge and intellectual assets it is expected that these changes will have far reaching implications. Local government and local communities' services need to start preparing now to adopt the advanced knowledge applications that are expected to appear in the near future.</i>
FS-I-02	<i>We have ICT strategy; We have got an information governance strategy, record management strategy, as well as Business Record Strategy for certain types of data for the use of Council i.e. for how long the housing department can keep the record for certain period of time. We need to reach for the rationale why we need such data and how to keep the records as part of KM.</i>
FS-I-03	<i>This Council utilises a CRM system as part of the Technical Hotline. The services offered are increasing with the recent addition of environmental queries and it has the potential to be used further within the Council for corporate use of Customer Relationship Management (CRM) software. This Council has a clear idea how to use other key applications in embedded form for better KM strategy.</i>
FS-I-04	<i>I can say that the current partnership with CIVICA for ICT strategy has already taken a lead to enhance our services and give people access to online services by using various internet tools. I think the KM strategy has been already identified as a philosophy that has the ability to impact on all aspects of an organisation, specifically the processes, information and communication structures in the organisation.</i>
FS-I-05	<i>It does have a clear view but it seems like we are still an early stage of the process because KM practices still need attention at a broader scope. At this Council many of the strategic initiatives deal with aspects that extend into different branches of management. I believe KM will endeavor to stick to the scope of this subsection and, for the most part, limit my discussion only to aspects relevant to knowledge management strategy.</i>
FS-I-06	<i>I think there are different knowledge types just as for ICT strategy and IT systems. However, dealing with knowledge management systems will be looking to focus more specifically on the combination of human and IT aspects.</i>

Code	Statement 'Q-13'
FS-I-01	<i>I say, it is still at the early embryonic stage at our Council but I believe in future this will reach to its maturity level with the wider use of knowledge management practices.</i>
FS-I-02	<i>Reflecting on what we talked about earlier we just implemented a mobile data</i>

	<i>management system that can allow us to use personal devices in a secure way to take ownership of the data while in use remotely. Though this is a pilot phase to access internal applications, it will make the job easier for people being in field work or visit or away at home.</i>
FS-I-03	<i>The answer is both 'yes' and 'no' because we have already realised that KM plays a key role to underpin the ICT strategy for enhanced services but a systematic approach to process KM is still at an early stage and needs more attention from key decision makers.</i>
FS-I-04	<i>The answer is both yes and no because it is already realised that KM plays a key role to underpin the ICT strategy for enhanced services but systematic approach to process KM is still at an early stage that needs more attention from key decision makers.</i>
FS-I-05	<i>I suppose a formal and more systematic process is required in future for gathering, indexing, managing and accessing knowledge based content. From the changing role of public-private partnerships to emerging technologies and the importance of capturing and transferring knowledge, this is a challenging issue we face at the moment to successfully share and manage knowledge related issues.</i>
FS-I-06	<i>I am sure that KM can contribute to cost efficiency and improved service delivery. It is therefore important to bear in mind that these advantages can only be achieved if KM is supported by local partners and other organisational processes, a suitable structure and an environment that is conducive to enhancing the knowledge based processes.</i>
Code	Statement 'Q-14'
FS-I-01	<i>There is definitely an aspiration to use knowledge to provide that an early intervention to improve the services and to link this to the development plan in the local area. The decision needs to be addressed with more intelligence than before because of knowledge management. There is recognition that the previous ways need to be changed in public services and society has to evolve to challenging demands. But it is still at an embryonic stage.</i>
FS-I-02	<i>I can only talk in general terms, but a lot of big projects in this Council are built on the basis of lessons learnt about carbon footprints. A new bus station next to the train station is a low carbon initiative and very environmentally friendly. The use of knowledge in working process should be applied for different reasons because at the end of the day we need to encourage planning department to go for sustainability development.</i>
FS-I-03	<i>I would like to say that Knowledge Management covers the framework for originating, organising, maintaining information and making it available to those who are entitled to make use of it. Yes, at our Council KM has been acknowledged as a route to for better performance that covers the areas of freedom of data, data protection, content management, knowledge sharing, security framework, data sharing, classification systems, custodianship etc.</i>
FS-I-04	<i>As I mentioned earlier the Council needs to bring into practice the systematic approach in order to convert its working experiences into improved processes. For example the local authorities during the recruitment process do specify</i>

	<i>and assess an employee's expected level of knowledge. However, employee knowledge and skills can only hold value for the Council once they are effectively applied to the employee's new position within the assigned job specifications.</i>
FS-I-05	<i>I suppose a formal and more systematic process is required in future for gathering, indexing, managing and accessing knowledge based contents. From the changing role of public-private partnerships to emerging technologies and the importance of transferring knowledge these are challenging issues we face at the moment to successfully share and manage knowledge related issues.</i>
FS-I-06	<i>I think currently it is quite challenging to convert the experiences of individual into documentation as lesson learnt practices as a knowledge management practice. I suppose that apart from the need for some improvements, the human resources and the information technologies available are all conducive to KM to some extent. The greatest challenge facing our Council in terms of becoming a knowledge organisation and achieving organisational effectiveness is attaining leadership support and establishing a sharing culture across the key areas.</i>

Code	Statement 'Q-15'
FS-I-01	<i>My answer is in 'yes' and 'no' because there is a need for an integrated system to deliver better and uniform services. I suppose managers of extension programmes are clearly aware of the need for revision and development of an integrated system with new skill sets held by today's high performers. If an early integrated system need is not handled correctly, it can be more costly and time consuming in later stages.</i>
FS-I-02	<i>System integration in this Council is our portal providing web services like LPG where all of our systems must pull data from one point to identify the individuals though this is done very well. We also do connect the system as dozens of systems are already connected by system integration. This makes the job easy for the users to find the right and relevant information at the right time in the MIS.</i>
FS-I-03	<i>After unitary status was given to the Council, all systems went through a transitional period whereby natural evolution facilitated modern technologies. Middleware was being used to support legacy systems which were not due change for 5 years.</i>
FS-I-04	<i>I would like to say that according to my observation and experience in the real life scenario information technology supports KM by facilitating quick searching, access to and retrieval of information, which in turn encourages cooperation and communication between members of an organisation. In fact we are using various ICT tools and techniques that need some kind of consolidation.</i>
FS-I-05	<i>Not exactly at the moment but there is a desire to have a strategic approach for an integrated knowledge based approach to achieve efficiency and effectiveness. The KM strategy should be used as a plan to highlight the organisation's goals in terms of KM.</i>

FS-I-06	<i>I think the ICT tools are available to the local Council to aid effective KM practices. I assume that the group of information technology tools or ICT strategies that are developed for the purpose of KM are known as KM systems that have the potential to integrate and consolidate the knowledge based systems more appropriately in future.</i>
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Code	Statement 'Q-16'
FS-I-01	<i>It may do but I think this is one of the areas in which I am particularly interested to learn from this research study. I think, it may happen in future but at an informal level at this stage, as I mentioned earlier that KM is still at an early stage in the local authorities.</i>
FS-I-02	<i>We have carried out case studies for people to encourage users to share knowledge e.g. we have done a child safety case, where the lessons are shared through a fictional family experience. This lets people learn from simulation cases. We are in the second year going ahead with this programme, which I think will help to capture tacit knowledge and mobilise it into action.</i>
FS-I-03	<i>The Council is keen to enhance the service delivery and better serve the local community as per their specific needs. To do so the Head of Legal Services and the ICT manager investigate how the Council should approach information management. The Data Protection role is transferred to the Head of Legal Services as the officer responsible for Information Management. A review of other legal requirements has been made including E-mail archiving to find the most appropriate way for the Council to comply to achieve better understanding about such resources.</i>
FS-I-04	<i>I believe the Council has already taken some initiatives to build an informal mechanism to gather and mobilize its tacit knowledge by encouraging its employees to work in open knowledge sharing environment. In order to encourage knowledge sharing culture we would like to make the use of popular educational techniques.</i>
FS-I-05	<i>My answer is in both 'yes' and 'no' but personally I think to some extent there is a mechanism existing to mobilize tacit and explicit knowledge. In order to enhance the Council knowledge, ICT strategy must therefore be involved across the entire Council spectrum. It must help knowledge development at all levels and facilitate and promote its diffusion to individuals, groups, or across the entire firm, in accordance with the organization's requirements.</i>
FS-I-06	<i>KM must manage organizational knowledge storage and retrieval capabilities, and create an environment conducive to learning and knowledge sharing. Similarly it must be involved in tapping external sources of knowledge whenever these are necessary for the development of the knowledge sources.</i>

Code	Statement 'Q-17'
FS-I-01	<i>I think there is a need to understand what are the key knowledge aspects? and where they reside? People sometime think integration is another costly exercise to combine systems into one. I think it will be simpler to have fewer systems to make things easier but from a local government perspective how to get to that</i>

	<i>stage, is still a big question mark.</i>
FS-I-02	<i>Potentially from an efficiency point of view as well as from economic point of view it is important to integrate the system.</i>
FS-I-03	<i>Yes, there is a need for systems to talk to each other and our ICT consolidation strategy is the solution for the long term. To deliver ICT projects that meet the Council's corporate strategy in accordance with the financial strategy and corporate plan we need to integrate fully with all key systems in order to become able to provide systems that respond to the e-government and continuing service transformation agenda.</i>
FS-I-04	<i>My answer is 'yes' because I think there is a need for technologies and a key resources consolidation strategy if we want to improve our service quality to meet customer requirements. The local government indeed has a top-down, hierarchical organisational structure, which is not the most conducive to KM efforts, in that it is characterised by a bureaucratic nature and thus it is not very responsive to changes being made.</i>
FS-I-05	<i>According to my experience, I think the integration between delivery process, integration of tools and technologies and integrated expertise can accelerate the Council delivery experience.</i>
FS-I-06	<i>I think there is a need for better and more integrated knowledge based planning system for improved efficiency and effectiveness. The network structure may consist of virtual teams and organisations that permit the organisation to generate greater value via a variety of unique skill combinations.</i>

Code	Statement 'Q-18'
FS-I-01	<i>I think the co-narrative may be how we identify resources and how to use them more appropriately but I think the Council is still at an early stage to do so.</i>
FS-I-02	<i>From a data quality and data integration point of view it is again relevant to the child safety case study to have simulation on fiction family behaviour and so on. To bring them together we can understand the family needs and the Council partners' joint strategy to support families to try see how the Council do better to do intervention to reduce crime and improve employability and child education.</i>
FS-I-03	<i>To improve performance, I think each individual has to personally take part in the KM process. However, KM is generally an organisational activity that needs a focused leadership vision to enable KM policies. To enhance performance, I believe, it is important to motivate individuals to share their knowledge by creating a social processes that will facilitate KM success.</i>
FS-I-04	<i>Being in employment within the local government for more than 34 years, I have seen many changes and continuous reforms for better service delivery but recently the top leadership vision has focused and recognised the importance of KM. Although it is clear that the local government does not have a formalised KM strategy in place yet.</i>

FS-I-05	<i>In order to answer this question, I would like to state that the implementation of a KM effort requires adequate support and dedication from top management as this influences how resources and time are allocated for the successful execution of the KM plan.</i>
FS-I-06	<i>I would like to add here that our Council has already recognised KM as an important factor and that indeed this is accepted by the leadership as the key subject of attention, but there is still a lack of knowledge about KM practices. Unless the organisation's leadership are committed to and support KM efforts, any successful attempt at KM will not be fruitful to enhance performance and to deliver value from knowledge management.</i>

Code	Statement 'Q-19'
FS-I-01	<i>I suppose one of the preventives will be the compliance barriers and data sharing barriers because of code of connection (COCO) for public services. I trust the organizational structure and its cultural variables are major influential forces in knowledge management. This covers the attitude of senior manager to have open discussions with their staff for creativity and dynamism such as the general level of commitment amongst the workforce at Council, the conducive nature of the immediate working environment, the level of importance the organisation places on employee's 'results' and the degree to which teamwork, participation and consensus is encouraged towards knowledge based planning system.</i>
FS-I-02	<i>The culture, vision and strategy are the supportive elements while finance and technology are the key barriers. I think, these elements include recognition, personal growth, achievement, work itself and promotion. The presence of such factors produces and increases positive feelings among the staff since they serve as supportive pillars in the Council's knowledge strategy.</i>
FS-I-03	<i>There is lack of choice from the economic point of view to consolidate our technological services. The organisational resources are tangible resources such as human, physical, organisational and financial and intangible resources such as reputational, regulatory, positional, functional, social and cultural. These resources are considered to be the more important and critical ones in attaining and sustaining a competitive knowledge sharing place.</i>
FS-I-04	<i>I think the organisational culture, key organisational resources including human, technological, financial and information, organisational structure, leadership approach and strategy, staff motivation, skills and capabilities are the key skills that can be supportive, if these are available in satisfactory form. Otherwise these key elements may be the major preventative factors.</i>
FS-I-05	<i>Some of the key supportive elements might be leadership will, vision, expertise, and the Council internal and external environment and the awareness as well as the desire for new changes. Key barriers might be the lack of motivation and organisational culture to encourage and promote knowledge based services.</i>
FS-I-06	<i>According to me the culture, staff training, financial strength, technological advancements are the key supportive factors while political, legal and environmental factors are the major preventive factors.</i>

Code	Statement 'Q-20'
FS-I-01	<i>Yes, our Council has already taken the action about the comprehensive area assessment inspections or reviews to identify key areas for improvement where we think knowledge would make difference. I think perhaps we need to understand how our customer database is designed, so that we can extract a particular report.</i>
FS-I-02	<i>I think we are going through a process at the moment in regards to the review of systems to identify the areas we are weak such as poor management of information and the services we provide. Our Council service rating was quite poor that was one of the reasons to initiate the improvement strategy.</i>
FS-I-03	<i>These ideas are based on local aspirations and will deliver fast, accurate and timely information in a wide variety of inter-related subjects that affect the core infrastructure of the community and as such will promote and sustain social inclusion, breaking down barriers, using modern technology. But the underlying key theme is that it is a partnership approach, sharing the benefits and cutting the costs for the greater good of the community at large.</i>
FS-I-04	<i>I suppose that the review of performance for improvement certainly makes vital changes in order to provide a mechanism for better service delivery and gauging the outcomes of day to day activities. I suppose knowledge management enables the local government to gain insight and understanding from its own experience and procedures.</i>
FS-I-05	<i>I think the assessment inspections and reviews for knowledge management in local government can make the difference but it again depends on the Council to level this to their leadership strategy and vision.</i>
FS-I-06	<i>I think the development of organisational knowledge capabilities can be addressed most completely by considering the four fields of individual technology, organisational technology, individual skills and behaviours, and organisational skills and behaviours. The strategic capabilities of any Council depend on its ability to process rapidly changing information and perspectives on the local authorities and their business environment, so these are in fact high order knowledge capabilities to make a difference.</i>

Code	Statement 'Q-21'
FS-I-01	<i>While looking forward, my answer is 'yes', because if there is better understanding to consider strategic considerations this will bring more improvement, but it is still quite early as KM still needs to be moved to the next level of maturity at the local government.</i>
FS-I-02	<i>Well I think in terms of planning system available electronically for citizens through the planning portal, such as finding out the specific planning</i>

	<i>application, I think that this is so far the key achievement. This also provides 24/7 access to track the progress of planning applications without visiting the planning office. KM will indeed bring more changes to enhance the efficiency and effectiveness including the continuous refinement of the planning system.</i>
FS-I-03	<i>I think people need to know why data are being collected and how data can play an important role in keeping information up to date and accurate. It means the knowledge based services would play key role to improve the efficiency and effectiveness in future.</i>
FS-I-04	<i>I suppose the overall workforce performance can be enhanced with the knowledge based ICT strategy. I believe to achieve greater improvement, it is necessary that the planning system must be simple, systematic and well documented, which is supported through reliable and accurate data recording systems.</i>
FS-I-05	<i>To talk about the practical improvement in the planning system specifically for operational efficiency and functional effectiveness due to knowledge management, I would like to state that KM has potential to enhance efficiency and effectiveness in the transformation of process for better service delivery.</i>
FS-I-06	<i>This is the central function for many local authorities today, resulting in both information products which create value for clients, and internal information which enables better decisions. It is in fact a composite of many processes, which to create a high level of value that must be directed to a specific group of customer to serve their specific needs, I mean tailored service delivery.</i>

Code	Statement 'Q-22'
FS-I-01	<i>I think it is helpful to see these developed meta models from the fieldwork in order to frame the concept and I am sure the next stage will be to apply these models in the practical life. It is quite helpful to identify the key elements to stimulate the conceptual thinking and to take the research to the next level in order to see how to conduct further research for more tangible work i.e. planning portal functional role in the planning application process.</i>
FS-I-02	<i>The research meta models look quite promising to identify key relevant elements for local government attention. It is quite helpful to identify the key elements to encourage the theoretical ideas in order to take this to the next level to see its practical implications in real life situation.</i>
FS-I-03	<i>I think this is an interesting work to identify key elements for local government to better deliver services and get stakeholders involved in their regional development with satisfactory customer based services.</i>
FS-I-04	<i>I would like to add that these models indicate a clear message to identify major elements for an integrated knowledge based planning system to</i>

	<i>achieve long term objectives. I believe this will be helpful to see the relevance of this research given the current issues and challenges within the local government to deliver quality and customised services.</i>
FS-I-05	<i>Yes, I can see the application of designed models and I think at this stage to look at the components and key elements that relate to knowledge management for improved efficiency and effectiveness in planning system convey a message. The transformation in the 'To-Be' model is clearly identifying the supportive and preventive elements.</i>
FS-I-06	<i>I suppose KM is still at an early stage in our Council and this research work is a conceptual discovery, which is at an early stage too, as we are just entering into the debate about the KM with our Council senior level management. It will be interesting to see how this research study can be incorporated to deliver customised services to achieve sustainable development in the local government real world scenario.</i>

Code	Statement 'Q-23'
FS-I-01	<i>I think currently it is important for us to deliver the customised services to the customers instead of offering something that is not in demand and how we can deliver things better through various innovative medium.</i>
FS-I-02	<i>The current planning system has undergone a lot of development. The planning portal is already integrated within the Council Website; I think this is the heart and mind function that requires to be further moved forward for a better and improved planning system and system innovation.</i>
FS-I-03	<i>Currently the Council runs a "One-Stop-Shop" Customer Contact Centre (with automatic call distribution facilities) primarily for housing benefits and local taxation enquiries and a Technical Hotline for dealing with highway, environmental and street care issues (supported by a call centre with an interactive system to handle enquiries). Together these 3 main areas deal with more than 80% of the Council's customer calls.</i>
FS-I-04	<i>The current state of the planning system at our Council in reference to KM is a reformed version to deliver better services. At its simplest form the workforce planning system is trying to provide the future demand for different types of staff and seeking to match this with local demand i.e. housing demand, transportation, NHS etc.</i>
FS-I-05	<i>The current state of planning system has already transformed from its previous state though a continuous reformation. The current state of the planning system has the potential to further improve in order to serve the communities for their specific requirements.</i>
FS-I-06	<i>I suppose the current state of the planning system 'As-Is' actually includes policies from the National Planning Policy Framework to explain and to follow how developments should be planned to reduce carbon emissions and protect the environment with sustainability development initiatives.</i>

Code	Statement 'Q-24'
FS-I-01	<i>This will be very interesting to have more research to understand how the KM can be in action to assist the Council operation and strategy. The future 'To-Be' state again depends on the technology and future ICTs requirements. It will also depend on the regulatory policies and there will be some practical challenges to apply to different Councils for local services but all still depends on what decision is to be taken.</i>
FS-I-02	<i>In future we can see the possibility of Cloud Computing; it will be more necessary that people handle data in right manner. More integration of systems will be the target for better services delivery to citizens i.e. CRM responses for customised services in term of planning department journey.</i>
FS-I-03	<i>In future all Council systems, as part of its strategy, must be compliant with the Government standards (e-GIF, e-GMS). All existing systems will be using middleware to conform and all legacy systems will use middleware until the point of renewal, at which time they will be fully compliant with government standards.</i>
FS-I-04	<i>I think the current state of the planning system is extending that analysis to identify the future skills and competencies needed to deliver new and improved services for local communities in terms of their individual or specific needs. The comparison between the present workforce and the desired future workforce will highlight shortages, surpluses and competency gaps, whether due to external pressure or internal factors.</i>
FS-I-05	<i>The future state of the planning system should be able to provide a map for planners to ensure that the Council has the right people, with the right skills, in the right jobs. Key questions to include when reviewing outcomes i.e. are the people, skills and jobs appropriate to ensure that the Council key objectives can be achieved in the short term, medium term and long term.</i>
FS-I-06	<i>I believe it will be important that in future the planning system has sufficient flexibility within the planning process to ensure that change management initiatives will not be held back through people resourcing issues while major outcomes need to be thoroughly and regularly evaluated to assess progress against the overall plan for sustainable development.</i>

Code	Statement 'Q-25'
FS-I-01	<i>I do not think so completely, but rather I believe this will depend on opportunities, as I watch the market trends to observe what the potential technology solutions that can be practically applicable. I think this is why knowledge management will be considered as an important feature to promote knowledge workers. I suppose knowledge workers will be required for organizing and sharing vital information, so that everyone can benefit from intellectual capital within the local government.</i>
FS-I-02	<i>I suppose the emerging technologies and emerging trends are among the key initiatives at our Council to encourage use of open data i.e. a GIS system that is integrated in the planning system. However, the success of using IT depends on several factors, such as resources availability, technology infrastructure and</i>

	<i>available knowledge. The emerging technological resources availability also refers to time, manpower and financial budget as major preventive factor.</i>
FS-I-03	<i>This Council is tailoring the Human Resources System to its needs. Other Councils may see the advantage and benefit of utilising the same or similar technology product at a minimal cost. I think, the top management at local authorities would be able to exploit the technology opportunities to be aware of the long-term economic considerations in devising their ICT strategies.</i>
FS-I-04	<i>I think the changes in demand associated with modernising the way that services are to be delivered including changing roles, new skill mixes different ways of delivering services e.g. outsourcing, partnerships, and joint ventures. In future the planning system will be facing new challenges while the entire structure of the council will undergo though changes to serve communities better.</i>
FS-I-05	<i>I suppose there will more demand for online internet based services to give access to users as and when they need to access local Council services. I think there will be a modification to the workforce planning process to be communicated to all relevant parties, ensuring that sufficient time is built in to allow future training needs to be achieved.</i>
FS-I-06	<i>Appropriate actions will need to be identified to address process problems or inefficiencies. Any changes to the processes and subsequent impact on the knowledge workers involved in current or future workforce planning initiatives need to be clearly communicated in order to improve efficiency and effectiveness towards smart and sustainable development.</i>

Appendix: F-1

Section: F-1.1 (b)

PhD Thesis

(Final Round SURVEY 2013

‘Interview’)

Title:

Innovative communication channels, effective coordination strategy and knowledge management in the UK local authority planning department: a study of the ICTs, social interaction and the planning process.

Objective:

An independent assessment of knowledge management practices in the UK local government planning system for efficient and effective planning services.

Survey:

Thank you for taking the time to participate in this study regarding the role of Knowledge Management in the UK local government planning system for enhanced efficiency and effectiveness to achieve future smart and sustainable development. Your response is much appreciated.

The results of this survey will be incorporated and presented in a PhD thesis that will be completed, submitted and defended by the end of year 2015 at the School of Computing and Technology, University of West London, UK.

This project has been conducted between 2009 and 2014 to investigate innovation in communication channels, effective coordination strategy and Knowledge Management in the UK local government in order to deliver improved planning services. For this reason, the research study has focused its specific interest on understanding the role of intellectual capital and knowledge development within information management practices in the UK local government in general and in your Council in particular.

Having carried out a number of data gathering exercises, this final survey will provide invaluable insights into Knowledge Management strategies and practices. These will be used to validate the emerging view of Knowledge Management strategies in the UK local government planning system. All participants who complete this survey will receive a detailed executive summary of the research findings report in PDF format.

All responses will be kept strictly confidential and will be presented in aggregate form in the thesis.

‘This study is about Knowledge Management. Knowledge Management combines the management, control and leveraging of unstructured information (including digital forms, text documents, engineering drawings, images, audio and video files) and structured information (including financial transaction data) to drive better planning process performance within the local authority and between organizations involved in the planning process.

INTERVIEW:

Q. No.	Question	Reference
1	What is your current job title and for how long have you held this position?	
2	What are your key job responsibilities in your current post and what were your previous job experiences?	
3	How do you describe the term knowledge management (KM) in the context of an improved planning system?	Section - 1 & 2
4	Are staff trained and mentored in information and knowledge skills at your Council?	
5	Does the Council have specific posts and roles dedicated to acquiring, managing and coordinating knowledge?	Section - 1
6	Do the Council's leaders reinforce the importance of identifying and sharing, creating, managing, and integrating knowledge in your Council?	Section - 2
7	Does the Council's culture encourage the exchange of knowledge and learning from day to day activities and development projects?	Section - 3
8	Do job descriptions and performance assessment processes acknowledge the importance of identifying, sharing, creating, managing, and integrating knowledge?	Section - 4
9	Within your Council are there examples of matrix or partnership working that deliberately draw on diverse knowledge?	Section - 5
10	Does your Council measure and audit knowledge management? If yes how is this done?	Section - 6
11	Does your Council have a clear view of its key knowledge and intellectual assets?	Section - 7
12	Does the Council have a firm and clear knowledge management strategy in operation to mobilize its key knowledge and intellectual assets?	Section - 7
13	Has the Council implemented systematic processes for gathering, organising, indexing and making accessible its knowledge assets both content and people?	Section - 8

14	Does the Council convert its working experience into improved planning processes and services systematically for sustainable development?	Section - 9
15	Do tools exist in the Council that have further potential for an integrated knowledge based planning system?	Section - 10
16	Has the Council employed any informal mechanisms to gather and mobilise its tacit knowledge, for example, after action reviews, communities, story-telling, master classes, networking events?	Section - 11
17	Do you think there is a need for an integrated knowledge based planning system for improved efficiency and effectiveness in your Council?	Section - 12 & 13
18	With regards to its vision, has any part of the Council articulated how improved Council performance and value will be derived from managing existing knowledge?	Section - 13
19	Please identify the key supportive and preventative knowledge elements that hold up or put off the development and implementation of an integrated knowledge based planning system in the UK local government?	Section - 13 & 14
20	Have any comprehensive area assessment inspections or reviews identified any areas for improvement where you now think that managing knowledge would make the difference?	Section - 14
21	Do you see practical improvement in the planning system operational efficiency and functional effectiveness because of knowledge management?	Section - 15
22	Please offer your comments on the research process and empirical modelling ' CMT MODEL ' and ' PKOT-MODEL ' in your own words?	Sections: - 14 & 15
23	What is the current 'As-Is' state of planning system in reference to KM in your Council?	
24	How do you see the future 'To-Be' state of planning system in your Council in reference to KM?	
25	To what extent is the future of planning system in your Council going to depend on effective knowledge workers using emerging technologies to achieve smart and sustainable development?	

Thank you for your Assistance!

You will be assured of complete confidentiality. The information you provide for this research study will not refer to you by name. You are free to withdraw from this study at any time without obligation. If you have any questions about the project, you can contact: Nasrullah Khilji (Researcher) 01234-758055
n.khilji@cranfield.ac.uk / nasrullah.khilji@uwl.ac.uk

Section: F-1.2

PhD Thesis

(Final Round SURVEY 2013

‘Questionnaire’)

Title:

Innovative communication channels, effective coordination strategy and knowledge management in the UK local authority planning department: a study of the ICTs, social interaction and the planning process.

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‘This study is about Knowledge Management. Knowledge Management combines the management, control and leveraging of unstructured information (including digital forms, text documents, engineering drawings, images, audio and video files) and structured information (including financial transaction data) to drive better planning process performance within the local authority and between organizations involved in the planning process.

Questionnaire:

Q-1:

Which of the following best describes your role in decisions regarding how information is controlled, managed and leveraged in your organisation?

You are a main decision-maker	
You are someone who has influence over your organisation's information management processes and strategies.	
You have no decision-making authority and little or no influence over your organisation's information management processes and strategies.	

Q-2:

Do you think that the current IT system enables the planner to do all of his/ her responsibilities and tasks at your Council?

Yes No To Some Extent No Idea

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Q-3:

Is it possible to access other IT systems for quality planning service delivery in your Council?

Yes No To Some Extent No Idea

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Q-4:

Do you access other non IT-based information sources e.g. physical maps and project reports?

Yes No To Some Extent No Idea

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Q-5:	Yes	No	To Some Extent	No Idea
Is it possible to share information with your colleagues effectively in your Council?				

Q-6:	Yes	No	To Some Extent	No Idea
Do you have the ability and resources to plan your work for better performance delivery?				

Q-7:	Yes	No	To Some Extent	No Idea
Does the public interface enable you to collate reports to Council effectively?				

Q-8:	Yes	No	To Some Extent	No Idea
Do the current systems enable you to work effectively as a professional with colleagues and other unit members?				

Q-9:	Yes	No	To Some Extent	No Idea
Do you believe that the intranet is an important tool to carry out your job?				

Q-10:

Do the key external data or information sources effectively integrate within your Council in an integrated IT environment?

Yes No To Some Extent No Idea

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Q-11:

In your day to day Knowledge Management: do you use solutions that include some or all of the following functionalities: (please tick all that apply)?

i.	Email Management	
ii.	Document Management	
iii.	Web Content Management	
iv.	Records Management	
v.	Document Imaging	
vi.	Document Collaboration and Sharing	
vii.	Business Process Management	
viii.	Customer Relationship Management	
ix.	Employee Relationship Management	
x.	Geographic Information System	

Q-12:

On a scale of 1-10 how important an issue is Knowledge Management (KM) to your local authority? Use 10 if KM is the most important initiative and 1 if it is not at all important?

Not at all important	2	3	4	5	6	7	8	9	Most important
1									10

Q-13:

Taking into consideration your Council's current position regarding the management, control and use of knowledge for planning and development decisions, which of the following statements best describes where your local authority is sitting on the planning system development cycle?

Currently developing knowledge management processes and strategies only	
Fully developed knowledge management processes and strategies only	
Fully developed knowledge management processes and strategies as well as planning processes and strategies to improve its use for effective decisions	
Fully developed knowledge management processes and strategies and fully developed processes and strategies that capitalises on the use of knowledge for effective planning decisions	

Any comments, please: -----

Q-14:

What do you consider to be the main benefit of Knowledge Management especially in meeting compliance and corporate governance requirements (please tick all that apply)?
Degree of perceived benefit (1=lowest and 10 = highest)

Main Benefits	Tick Mark	Degree of Perceived Benefit
Allowing greater access to information throughout the local authority		
Automation of business / planning processes		
Encouraging better collaboration between employees, citizen and suppliers		
Controlling increasing volumes of information		
Increasing security and privacy of information		

Reducing the cost of information management		
Improving customer service for sustainable development		
Improving planning process operational efficiency		
More highly engaged and motivated staff		
Attraction and satisfaction of customers		

Any comments, please: -----

Q-15:

What do you consider to be the other benefits of Knowledge Management? (please tick all that apply)? Degree of perceived benefit (1=lowest and 10 = highest)

Benefits	Tick Mark	Degree of Perceived Benefit
Meeting compliance and corporate governance requirements		
Automation of business processes		
Allowing greater access to information throughout the local government		
Encouraging better collaboration between employees and partners		

Controlling increasing volumes of information		
Increasing security and privacy of information		
Reducing the cost of information management		
Improving customer service		
Improving business operational efficiency		
More highly engaged employees and satisfied customers		

Q-16:

Which of the following statements best reflects your Council's current status regarding Knowledge Management?

There is a formal strategy, which has been fully implemented	
There is a formal strategy, but have not yet fully implemented	
There is no formal strategy, but we are addressing this issue	
There is not consideration to implement a formal knowledge management	

Q-17:

To what extent will any future KM strategy in your council be implemented?

Throughout the Council	
Particular functional Areas only	
I am not sure about this	

Q-18:

Does your Knowledge Management strategy include the following?
(please tick all that apply)

Easy to understand data storage methods	
Employee compliance rules and responsibilities	
Documented employee training	
Electronic discovery conventions	
Protection of individual privacy	
Security and confidentiality of information	
Average mail box size limits	
Clear practices for retaining and deleting information	
Enforcement conventions	
Building social media solutions for employee collaboration	
Attraction and retention of customers	
Clear protocols for user archiving (who and when)	

Any other aspects / Criteria: -----

Q-19:

What is the current average monthly planning application volume processed online through planning web portal in your local authority?

<10%	(10-20)%	(20-30)%	(30-40)%	(40-50)%	(50-60)%	>60%

Q-20:

What is the predicted annual rate of growth in the volume of planning application that will be processed online through planning web portal in 2013 - 2014?

<10%	(10-20)%	(20-30)%	(30-40)%	(40-50)%	(50-60)%	>60%

Q-21:

What do you consider to be the key KM **SUPPORTIVE FACTORS** to enhance the efficiency and effectiveness of planning system (please rate each KM factor: A= Not-Applicable; L= Low; A= Average; H= High; V/H= Very High)?

Supportive Factors	Rating Scale				
The local government ICT VISION provides a greater access to information	N/A	L	A	H	V/H
The local government ICT STRATEGY plays a key role to implement an online initiative successfully	N/A	L	A	H	V/H
An effective style of LEADERSHIP is imperative to achieve success from KM	N/A	L	A	H	V/H

The PUBLIC DEMAND for technological advancements from people is a crucial supportive KM factor	N/A	L	A	H	V/H
FINANCIAL STRENGTH and economic force is another crucial supportive strength towards planning system reform and technological advancement	N/A	L	A	H	V/H

Any comments, please: -----

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Q-22:

What do you consider to be the key KM **PREVENTATIVE FACTORS** to constrain the efficiency and effectiveness of planning system (please rate each category: 'N/A= Not-Applicable; L= Low; A= Average; H= High; V/H= Very High')?

Preventative Factors	Rating Scale				
POLITICAL FORCE is a preventative element if there is a lack of potential will, vision and leadership support	N/A	L	A	H	V/H
An integrated knowledge based planning system can be hindered because of some shortage of ECONOMIC RESOURCES	N/A	L	A	H	V/H
LEGAL FACTORS are another key barrier related to the existence of appropriate laws, rules, regulations and directives	N/A	L	A	H	V/H

TECHNOLOGY itself is another major obstacle in the implementation of new planning system reforms	N/A	L	A	H	V/H
The ORGANISATIONAL ENVIRONMENT and administrative culture have proved in some local authorities to be reluctant to welcome an integrated knowledge based planning system	N/A	L	A	H	V/H

Any comments, please: -----

Q-23:

Which areas of the Council's information handling areas are predicted to generate the largest increases in knowledge volume in the next 12 months? (please tick all that apply)?

Finance and Accounting	
Human Resources and Payroll	
Data and Records Management	
Information Management and Public Library	
Sales and Marketing	
E-Business and E-Commerce	
Research and Development	
Computing and Technology (IT)	
CRM and Call Centre	
Purchasing and procurement	
Supply chain management	

Q-24:

Considering the following components of KM technology, could you please indicate if your Council has implemented, is planning to implement or has no plans to implement each of these in the next 12 months?

Component	Implemented	Planning to Implement	No plans to Implement	No Idea
E-Mail Management				
Business Process Management				
Document Capture and Document Imaging for Capturing and Managing Paper Documents				
Document Management for Check-in/Check-out, Security and Library Services				
Document-Centric Collaboration for Document Sharing and Supporting Project Teams				
Customer Experience Management for Managing Applicants Feedback Programmes				
Customer Information Management and CRM				
Web Content Management for Managing Web Content and User Interaction				
Records Management for Automating Retention and Archiving				
Social Media Capabilities for Content Management and Planning Processes for Sustainability				
Geographical Information System to be Embedded within Planning System Integration				

Q-25:

Which providers of KM technology for Planning System do you currently use? (Please select all that apply)

SAP	File-Net	EMC	Hummingbird	Microsoft	Vignette	Objective
Xerox	IDOX	Oracle	Interwoven	Open Text	Stellent	IBM
CISCO	Fujitsu	Civica	Moxiesoft	Zendesk	KBPublisher	KANA

Q-26:

Which providers of KM technology are you considering for future implementation of Planning System? (Please select all that apply)

SAP	File-Net	EMC	Hummingbird	Microsoft	Vignette	Objective
Xerox	IDOX	Oracle	Interwoven	Open Text	Stellent	IBM
CISCO	Fujitsu	Civica	Moxiesoft	Zendesk	KBPublisher	KANA

Q-27:

Overall, using a scale of 0 to 10, where 0 is 'No Impact' and 10 is 'Significant Impact', please rate the impact of KM on the performance of your local authority for sustainable development during the last 12 months on each of the following?

	No Impact '0'	1-3	3-5	5-7	7-9	Significant Impact '10'	No Idea
Improving Applicants Experience / Satisfaction							
Increasing Productivity and Operational Efficiency							
Increasing Employee Engagement							
Achieving Revenue Generation Goals / Financial Strength							

Q-28:

How do you see the role of ICT and online planning portal in your Council to deliver quality planning services to the local communities for sustainable development?

Q-29:

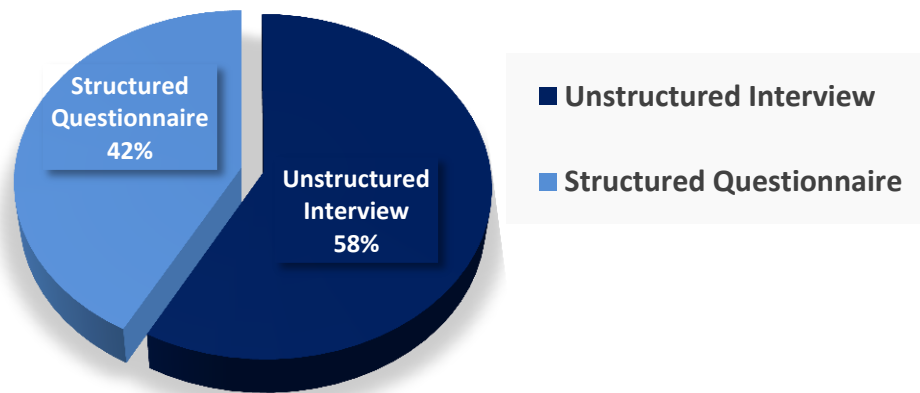
How do you see the future 'To-Be' state of planning system in your Council and what do you say about the benefits / drawbacks of an integrated knowledge based planning system and its key advantages / disadvantages in order to achieve efficiency and effectiveness?

Thank you for your Assistance!

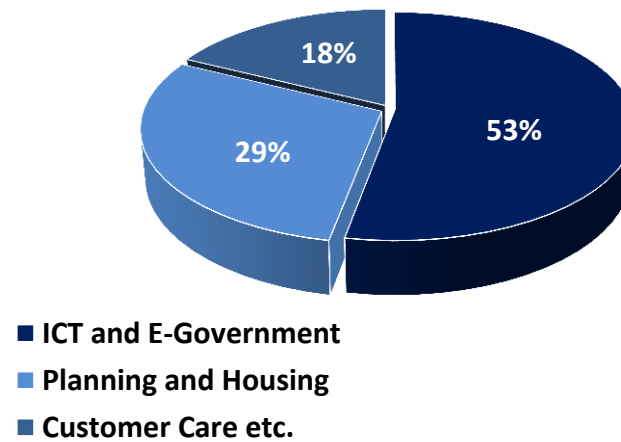
You will be assured of complete confidentiality. The information you provide for this research study will not refer to you by name. You are free to withdraw from this study at any time without obligation. If you have any questions about the project, you can contact:
 Nasrullah Khilji (Researcher) 01234-758055 n.khilji@cranfield.ac.uk /
nasrullah.Khilji@uwl.ac.uk

Section: F-1.2.1 (Data Analysis)

Total Responses from Final Survey



Respondents' Background



Question	Statements	Data Analysis Matrix				
1	Which of the following best describes your role in decisions regarding how information is controlled, managed and leveraged in your organisation?	You are a main decision-maker	You are someone who has influence over your organisation's information management processes and strategies.	You have no decision-making authority and little or no influence over your organisation's information management processes and strategies.		
	Response	5	8	3		
2	Do you think that the current IT system enables the planner to do all					
	Response	7	5	6	0	
3	Is it possible to access other IT systems for quality planning service delivery in your Council?	Yes	No	To Some Extent	No Idea	
	Response	10	2	4	0	
4	Do you access other non IT-based information sources e.g. physical maps and project reports?	Yes	No	To Some Extent	No Idea	
	Response	15	0	1	0	
5	Is it possible to share information with your colleagues effectively in your Council?	Yes	No	To Some Extent	No Idea	
	Response	9	2	5	0	
6	Do you have the ability and resources to plan your work for better performance delivery?	Yes	No	To Some Extent	No Idea	
	Response	8	3	5	0	
7	Does the public interface enable you to collate reports to Council effectively?	Yes	No	To Some Extent	No Idea	
	Response	4	4	6	2	
8	Do the current systems enable you to work effectively as a professional with colleagues and other unit members?	Yes	No	To Some Extent	No Idea	
	Response	10	0	6	0	
9	Do you believe that the intranet is an important tool to carry out your job?	Yes	No	To Some Extent	No Idea	
	Response	13	1	2	0	
10	Do the key external data or information sources effectively integrate within your Council in an integrated IT environment?	Yes	No	To Some Extent	No Idea	
	Response	6	4	4	2	
11	In your day to day Knowledge Management: do you use solutions that include some or all of the following functionalities: (please tick all that apply)?	i. Email Management	ii. Document Management	iii. Web Content Management	iv. Records Management	v. Document Imaging
		16	12	5	4	10
		vi. Document Collaboration and	vii. Business Process Management	viii. Customer Relationship	ix. Employee Relationship	x. Geographic Information System
12	On a scale of 1-10 how important an issue is Knowledge Management (KM) to your local authority? Use 10 if KM is the most important initiative and 1 if it is not at all important?					
		<2	<4	<6	<8	<10
	Response	1	2	2	5	6

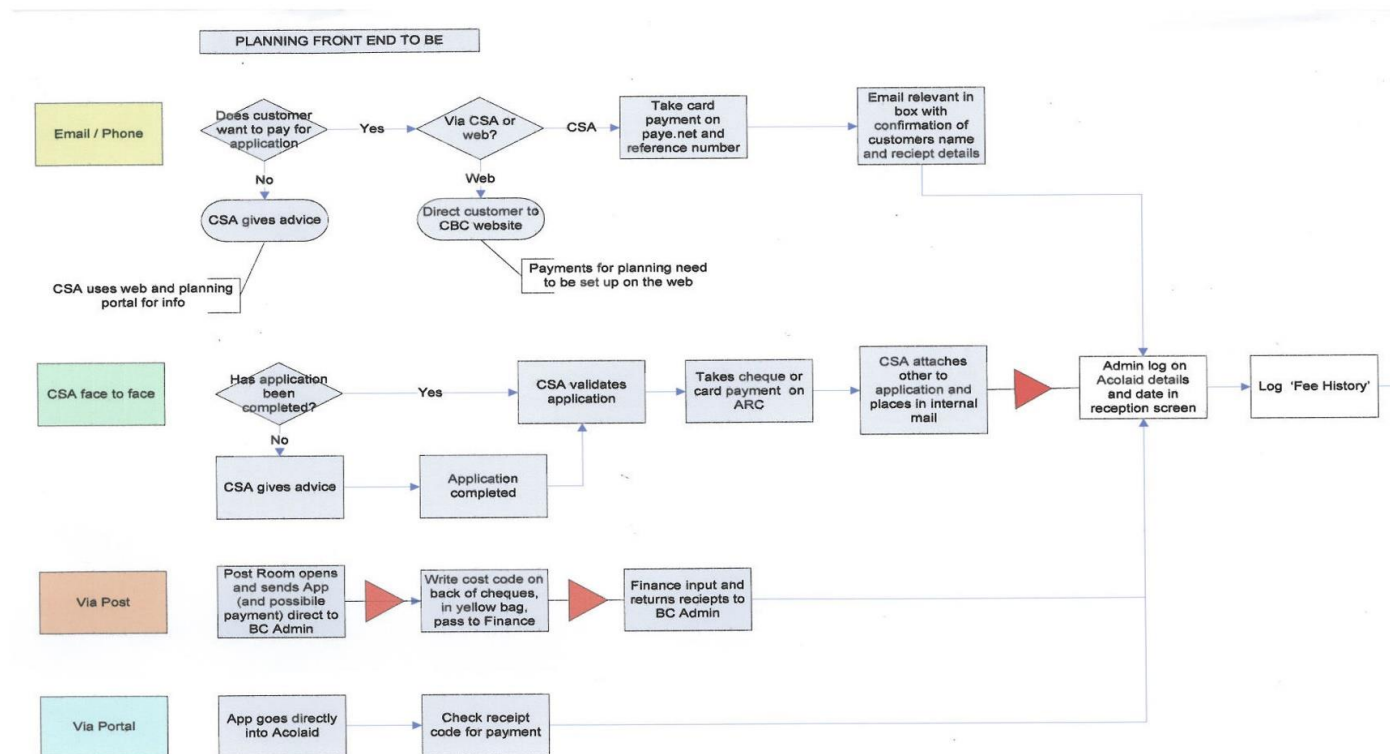
13	Taking into consideration your Council's current position regarding the management, control and use of knowledge for planning and development decisions, which of the following statements best describes where your local authority is sitting on the planning system development cycle?	Currently developing knowledge management processes and strategies only	Fully developed knowledge management processes and strategies only	Fully developed knowledge management processes and strategies as well as planning processes and strategies to improve its use for effective decisions	Fully developed knowledge management processes and strategies and fully developed processes and strategies that capitalises on the use of knowledge for	Any other comments:	
	Response	9	0	2	3	2	
14	What do you consider to be the main benefit of Knowledge Management especially in meeting compliance and corporate governance requirements (please tick all that apply)? Degree of perceived benefit (1=lowest and 10 = highest)	Allowing greater access to information throughout the local authority	Automation of business / planning processes	Encouraging better collaboration between employees, citizen and suppliers	Controlling increasing volumes of information	Increasing security and privacy of information	
	Response	7	6	4	3	2	
		Reducing the cost of information	Improving customer service for sustainable	Improving planning process operational	More highly engaged and motivated staff	Attraction and satisfaction of	
	Response	2	6	8	8	10	
15	What do you consider to be the other benefits of Knowledge Management? (please tick all that apply)? Degree of perceived benefit (1=lowest and 10 = highest)	Meeting compliance and corporate governance requirements	Automation of business processes	Allowing greater access to information throughout the local government	Encouraging better collaboration between employees and partners	Controlling increasing volumes of information	
	Response	8	5	6	12	6	
		Increasing security and privacy of information	Reducing the cost of information management	Improving customer service	Improving business operational efficiency	More highly engaged employees and satisfied customers	
	Response	4	8	4	15	12	
16	Which of the following statements best reflects your Council's current status regarding Knowledge Management?	There is a formal strategy, which has been fully implemented	There is a formal strategy, but have not yet fully implemented	There is no formal strategy, but we are addressing this issue	There is not consideration to implement a formal		
	Response	6	8	5	3		
17	To what extent will any future KM strategy in your council be implemented?	Throughout the Council	Particular functional Areas only	I am not sure about this			
	Response	12	8	4			
18	Does your Knowledge Management strategy include the following? (please tick all that apply)	Easy to understand data storage methods	Employee compliance rules and responsibilities	Documented employee training	Electronic discovery conventions	Protection of individual privacy	Security and confidentiality of information
	Response	10	12	8	13	8	6
		Average mail box size limits	Clear practices for retaining and deleting information	Enforcement conventions	Building social media solutions for employee collaboration	Attraction and retention of customers	Clear protocols for user archiving (who and when)
	Response	6	9	4	15	12	14

19	What is the current average monthly planning application volume processed online through planning web portal in your local authority?	<10%	(10-20)%	(20-30)%	(30-40)%	(40-50)%	(50-60)%	>60%
	Response	0	0	0	8	12	6	2
20	What is the predicted annual rate of growth in the volume of planning application that will be processed online through planning web portal	<10%	(10-20)%	(20-30)%	(30-40)%	(40-50)%	(50-60)%	>60%
	Response	0	0	0	0	6	12	14
21	What do you consider to be the key KM <u>SUPPORTIVE FACTORS</u> to enhance the efficiency and effectiveness of planning system (please rate each KM factor: A= Not-Applicable; L= Low; A= Average; H= High; V/H= Very High)?	The local government ICT VISION provides a greater access to information	The local government ICT STRATEGY plays a key role to implement an online initiative successfully	An effective style of LEADERSHIP is imperative to achieve success from KM	The PUBLIC DEMAND for technological advancements from people is a crucial supportive KM factor	FINANCIAL STRENGTH and economic force is another crucial supportive strength towards planning		
	Response	8	12	14	12	14		
22	What do you consider to be the key KM <u>PREVENTATIVE FACTORS</u> to constrain the efficiency and effectiveness of planning system (please rate each category: 'N/A= Not-Applicable; L= Low; A= Average; H= High; V/H= Very High')?	POLITICAL FORCE is a preventative element if there is a lack of potential will, vision and leadership support	An integrated knowledge based planning system can be hindered because of some shortage of ECONOMIC RESOURCES	LEGAL FACTORS are another key barrier related to the existence of appropriate laws, rules, regulations and directives	TECHNOLOGY itself is another major obstacle in the implementation of new planning system reforms	The ORGANISATIONAL ENVIRONMENT and administrative culture have proved in some local authorities to be reluctant to welcome an		
	Response	13	10	8	14	14		
23	Which areas of the Council's information handling areas are predicted to generate the largest increases in knowledge volume in the next 12 months? (please tick all that apply)?	Finance and Accounting	Human Resources and Payroll	Data and Records Management	Information Management and Public Library	Sales and Marketing	E-Business and E-Commerce	
	Response	10	12	8	14	6	12	
	Response	14	15	12	7	6		
24	Considering the following components of KM technology, could you please indicate if your Council has implemented, is planning to implement or has no plans to implement each of these in the next 12 months?	E-Mail Management	Business Process Management	Document Capture and Document Imaging for Capturing and Managing Paper Documents	Document Management for Check-in/Check-out, Security and Library Services	Document-Centric Collaboration for Document Sharing and Supporting Project Teams	Customer Experience Management for Managing Applicants Feedback	
	Response	16	12	10	12	16	12	
	Response	12	14	13	15	16		
		SAP	File-Net	EMC	Hummingbird	Microsoft	Vignette	Objective
		4	3	5	5	4	3	5

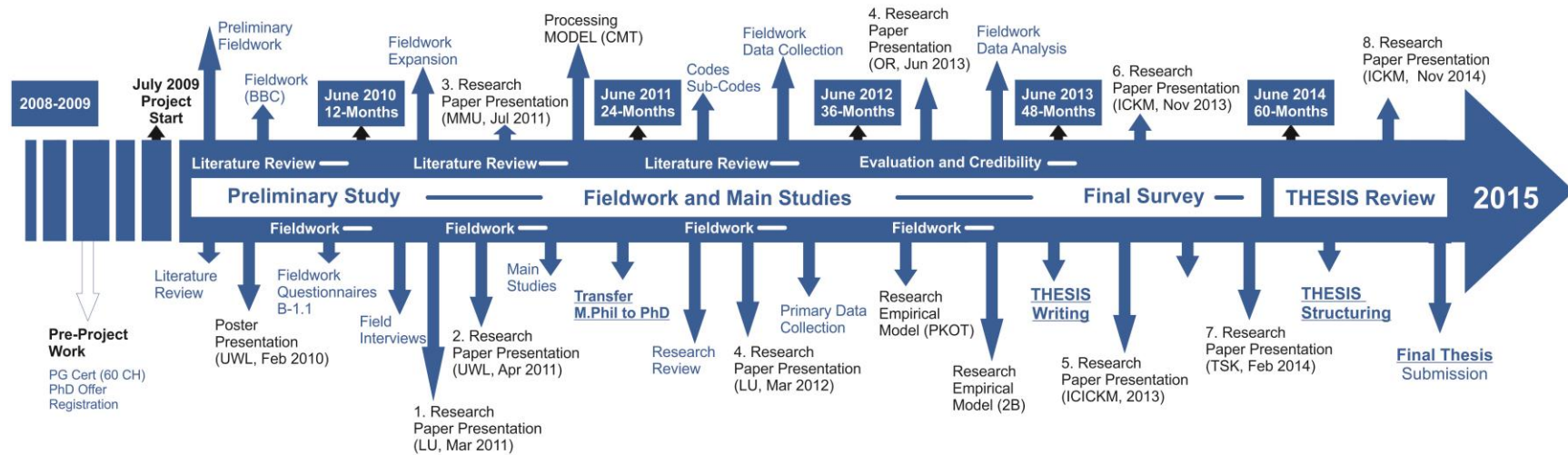
25	Which providers of KM technology for Planning System do you currently use? (Please select all that apply)	Xerox	IDOX	Oracle	Interwoven	Open Text	Stellent	IBM
		12	12	10	10	11	3	12
		CISCO	Fujitsu	Civica	Moxiesoft	Zendesk	KBPublisher	KANA
		8	7	8	6	2	2	6
26	Which providers of KM technology are you considering for future implementation of Planning System? (Please select all that apply)	SAP	File-Net	EMC	Hummingbird	Microsoft	Vignette	Objective
		12	10	8	3	16	4	7
		Xerox	IDOX	Oracle	Interwoven	Open Text	Stellent	IBM
		12	15	12	10	12	6	12
		CISCO	Fujitsu	Civica	Moxiesoft	Zendesk	KBPublisher	KANA
		12	10	10	8	5	2	3
27	Overall, using a scale of 0 to 10, where 0 is 'No Impact' and 10 is 'Significant Impact', please rate the impact of KM on the performance of your local authority for sustainable development during the last 12 months on each of the following?	Improving Applicants Experience / Satisfaction	Increasing Productivity and Operational Efficiency	Increasing Employee Engagement	Achieving Revenue Generation Goals / Financial Strength			
	Response	12	14	8	6			
28	How do you see the role of ICT and online planning portal in your Council to deliver quality planning services to the local communities for sustainable development?	This question from the final survey questionnaire is aimed at the senior level managers of participating Councils, i.e. the ICT administrative director (chief information officer) at Bedford Borough Council, since it is the senior administrative position, who may be expected to have overall strategic insight. In the UK local government, however, no instructions were confirmed to justify how online planning portal strategy is finalised. However, the planning portal was already linked to the Councils' web portal. It was hoped to reveal relevant target groups by asking at the end of the questionnaire who in fact had completed it. The Questionnaire was distributed online within five local authorities, the senior level management were approached for taking their views about their ICT vision, strategy and consolidation plan. It was useful and interesting to collect diverse views due to their financial constraints and on-going pressure to perform better, faster, cheaper with enhanced efficiency and effectiveness. The data analysis of questionnaire was incorporated in the thesis chapter nine (Ch-9).						
29	How do you see the future 'To-Be' state of planning system in your Council and what do you say about the benefits / drawbacks of an integrated knowledge based planning system and its key advantages / disadvantages in order to achieve efficiency and effectiveness?	Senior Planning Officer, Chief Information Officer, Head of ICT, Senior IT and E-Government Managers, System Analyst and Head of Customer and Cultural Services were among the key participants. From responses of questionnaire last question the Councils' ICT strategy was focused to measure and keep powers within the local planning authorities as a key benefit to make agile decision efficiently and effectively. It was observed that this may merely give applicants the choice of an alternative service in situations where this is justified for planning permission. It was noted from the participants' responses that the local government would prefer to work closely with the local partners and associations for customised service delivery. It was analysed from responses that the local government would like to consider the use of Planning Advisory Service (PAS) to encourage that their local partners and associates receive greater support on appropriate local and regional development.						

Section: F-1.3

The Central Bedfordshire Council Planning System Sample To Be Plan Front


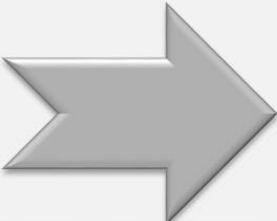



Source: ICT Strategy for Planning Department, Central Bedfordshire Council

Section: G-1.1**Chronological Chart 2009 - 2015**

Section: G-1.2

Research
Fieldwork
and Project
Summary in
Graphical
Matrix

Research Fieldwork	Preliminary Study		Main Study				Final Survey		
Methods	Interview	Questionnaire	Interview	Questionnaire	Online Forums	E-Mailing	Interview	Questionnaire	
App: A-1.2, A-1.3	Interviews 3-Sessions	Questionnaire 24-Responses							
App: A-1.4 , 1,2,3,4/A-1.5	Interview 5-Sessions	Questionnaire 29-Responses							
F: 7.2, 7.3, 7.4 T: 7.1, 7.2			Interviews 4-Sessions	Questionnaire 25-Responses	Forums 12-Rep	E-Mailing 13-mails			
App: B-1.1, B-1.2, C-1.1 & 2			Interview 6-Sessions	Questionnaire 12-Responses	Forums 10-Rep	E-Mailing 8-mails			
D-1.1 to D-1.6, E-1.1, E-1.2 F: 8.2, 8.3, 8.4			Interviews 8-Sessions	Questionnaire 19-Responses	Forums 8-Rep	E-Mailing 14-mails			
F: 9.1, 9.2,9.3 F-1.1, F-1.2							Interviews 6-Sessions	Questionnaire 16-Responses	
Meta Models	CMT Model-I	CMT Model-II	2Es / 3Es Model	PKOT Model-I	PKOT Model-II	'As-Was' 'As-Is' Models	Transformation Models	'To-Be' Model	
Time Frame	Year-1 2009	Year-2 2010	Year-3 2011	Year-4 2012	Year-5 2013	Year-6 2014	Year-7 2015		
Chapter 1	Chapter 2	Chapter 3	Chapter 4	Chapter 5	Chapter 6	Chapter 7	Chapter 8	Chapter 9	Chapter 10
PART-I 'Background'			PART-II 'Method'		PART-III 'Fieldwork'			PART-IV 'Outcome'	

Thesis Project End (2009 – 2015)

Innovative communication, effective coordination and knowledge management in UK local authority planning departments

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