MOBILE TECHNOLOGY CAPABILITIES AND THEIR ROLE IN SERVICE INNOVATION PRACTICES IN CREATIVE SMES

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Copyright Statement

Abstract

Mobile Technology Capabilities and their Role in Service Innovation Practices in Creative SMEs

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Mobile technology is a next step in the expansion of opportunities made available by information technology (IT). It remains questionable as to whether mobile technology differs from fixed networks and stationary IT, while the role of mobile technology deployment in service innovation practices still needs to be established. In this thesis service innovation practices and mobile technology deployment are studied in a creative industry setting – in-depth interviews with 31 SME managers are analysed using a grounded theory approach. A capability approach, wherein capabilities imply a use-in-practice analysis of a firm's assets and competences deployment, assists in conceptualising the process of mobile technology deployment and understanding qualitative results. As a result, this study concludes that accessing or acquiring mobile technology resources and developing mobile technology capabilities underpin mobile technology deployment. Primarily, this thesis's main theoretical contribution is in introducing and defining a new concept named 'mobile technology capabilities', namely a firm's unique practices employed in orchestrating mobile technology resources to create a competitive advantage. Mobile technology capabilities consist of five distinct practices that firms perform to combine and integrate mobile technology resources into organisational processes, namely learning, leading, transforming, leveraging mobile technology resources and solving problems. Moreover, this study concludes that interaction between mobile technology resources and mobile technology capabilities stimulates and facilitates both process and product service innovation practices, where organisational commitment towards mobile technology deployment determine the innovation practices with which a firm is going to engage. Hence, three clusters of creative service SMEs were identified in this study, which reflect on diverse practices of mobile technology deployment. The understanding of mobile technology deployment process that derives from this thesis is particularly significant in showing SMEs' managers the real value in embracing mobile technology.

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Finally, I thank my sweetheart, my life and my world, Elisa. You are who motivates me now, and I could not have completed this study without such motivation.

Dedication

With love and admiration,

I dedicate this thesis to my true inspiration, best friend and role model,

Mother.

"A mother is the truest friend we have, when trials, heavy and sudden, fall upon us; when adversity takes the place of prosperity; when friends who rejoice with us in our sunshine, desert us when troubles thicken around us, still will she cling to us, and endeavor by her kind precepts and counsels to dissipate the clouds of darkness, and cause peace to return to our hearts."

(Washington Irving)

Declaration

I declare that no material contained in the thesis has been used in any other submission for an academic award.

Signature ..... Date .....

Elvira Bolat

Acronyms and Abbreviation

3G – Third generation mobile broadband

ADSL – Asymmetric digital subscriber line

API – Application programing interface

B2B – Business-to-business

B2C – Business-to-consumer

B&M – Brick and mortar

CIS II – Second European Innovation Survey

CRQ – Central research question

DCMS – Department for Culture, Media and Sport

DMB – Digital media broadcasting

EU – European Union

E-commerce – Electronic commerce

GDP – Gross domestic product

GSM – Global system mobile

GPRS – General packet radio system

GPS – Global positioning system

HSDPA – High-speed downlink packet access

HTTP – Hypertext transfer protocol

IBM – International Business Machines

ICT – Information and communication technologies

IHIP – Intangibility, heterogeneity, inseparability and perishability

IMS – IP Multimedia System

IP – Intellectual property

IT – Information technologies

LTE – Long-term evolution

KBV – Knowledge-Based View

M-commerce – Mobile commerce

MP3 – Portable music player

MTI – Mobile technology infrastructure

MWS – Mobile Web services

NHS – National Healthcare Service

NSD – New service development

NPD – New product development

PAN – Personal area networks

PDA – Personal digital assistants

R&D – Research and development

RBV – Resource-Based View of the firm

RFID – Radio frequency identification

RPC – Reverse product cycle

RQ – Research question

SDL – Service-dominance logic

SI – Service innovation

SIPs – Service innovation practices

SIPPc – Service process innovation practices

SIPPd – Service product innovation practices

TSB – Technology strategy board

TV – Television

WAP – Wireless application protocol

Wi-Fi – Wireless fidelity

WLAN – Wireless local area network

UK – United Kingdom

US – Unites States

Chapter 1. Introduction

1.1. Overview of the Chapter

This chapter introduces this research by highlighting gaps in the existing literature and justifying the need to study mobile technology deployment and its role in innovation produced by service firms. As the study establishes the contextual focus of this thesis , section 1.4. contextualises this study and justifies the choice made in this respect. The aims and objectives are listed thereafter, following which the contribution of this study is clearly elaborated. Lastly, the structure of the thesis is described.

1.2. Background

Two broad theoretical perspectives form a fundamental platform for this study, and the interconnection between the two represents a basis for empirical investigation and conceptualisation. Firstly, mobile technology in terms of its definition and typology is illustrated briefly, in order to provide background knowledge on the subject matter of the research. Secondly, the current state of thought on the service innovation (SI) concept is summarised. Suffice to say, both aspects lie within the strategic marketing domain, where the competitive advantage of the firm is sustained through the development and deployment of distinctive, firm-unique capabilities as well as prioritising innovation as a strategic choice. Additionally, the research on mobile technology generally compliments scholarly work within the information systems domain.

Technological advancements have passed far beyond the boundaries of industrial innovativeness by gaining the status of universal currency in modern times. As a next step in the evolution of the information technology (IT), the ubiquity feature offers the possibility of transmitting information within a space and time-independent context, which subsequently leads to the enrichment of the value delivered by mobile technological platforms (Balasubramanian et al. 2002; Thompson 2009; Park et al. 2014). The business world is facing the transformation of activities from electronic commerce (e-commerce) operations towards mobile commerce (m-commerce) (Ngai and Gunasekaran 2007; Einav et al. 2014; Fawzy and Salam 2015).

Mobile technology, which is a new wave in the expansion of opportunities made possible by invention of the Internet, has not only penetrated the personal lives of individuals but has also transformed the nature of work, communication and

entertainment (Bouwman et al. 2008; Davies and Sigthorsson 2013; Heisterberg and Verma 2014; Karanasios and Allen 2014). Davies and Sigthorsson (2013) conclude that new skills, new jobs and new degrees have been created as a result of mobile technology and social media's intervention into business activities.

Despite the fact that mobile technology has existed for the last fifteen years, academics cannot reach a conclusion on what actually constitutes mobile technology. There are two perspectives in this respect. The first considers mobile or wireless[1] devices as "*an alternative way to interact with a traditional Web site, albeit in a different format or on a more limited or constrained basis*" (Tarasewich et al. 2002, p. 43; Murphy et al. 2014). The opposing group of researchers and practitioners (De Reuver et al. 2008; Feijóo et al. 2009; Lu et al. 2014; Park et al. 2014; Sanakulov and Karjaluoto 2015) believes that mobile services are novel, unique and fundamentally different. Thus, it is still questionable as to whether mobile technology is a unique category of technology or simply a technical extension of fixed networks and stationary desktop IT. By remaining unresolved, this question prevents firms from reacting to business opportunities offered by mobile technology deployment. For practitioners and academics it should be clear as to whether existing knowledge on fixed networks and stationary desktop IT is applicable to mobile technology or whether new approaches and models need to be introduced.

Nevertheless, Xiaojun et al. (2004, p. 205) define mobile technology by broadly emphasising the essense of technology and underlining three categories, namely mobile and wireless networks, the mobile Internet and mobile devices:

> *"A broad category that includes all devices, protocols and infrastructures that allow one to communicate, interact and exchange data with an individual or system anywhere and anytime."*

As such, interaction and the exchange of information anytime, anywhere is what actually distinguishes mobile technology from fixed networks and stationary IT. Nevertheless, no empirical study to date has actually proved this notion, and so there is a need to explore the practice of mobile technology deployment in a business setting. Why? Because De Reuver et al. (2008) state that an entirely new dimension of mobility

[1] Mobile and wireless terms are used interchangeably by researchers pursuing this point of view.

drives new strategic and operational opportunities for companies. As a result, the deployment of mobile technology provides distinctive and unique experiences as compared to e-commerce business opportunities.

Moreover, further exploration of new ways of employing this ubiquitous technology remains a great challenge due to the lack of established standards concerning the technical aspects of technology operation as well as the fundamental nature of the subject matter:

> *"Lack of standards… will hurt mobile commerce because it will hurt the ability of companies, be they the carriers or small software entrepreneurs, to innovate and bring to market products that consumers want and will adopt." (Burger 2007).*

According to Burger (2007), the variety of technological platforms, multiple operating systems and therefore different application designs are the biggest drawbacks to ensuring the future success of mobile business. As a result, there is a need to gain greater understanding of what mobile technology is and how this technology is deployed in a business setting.

Despite the fact that the technical nature of mobile devices is the core feature that differentiates them from the e-commerce concept, "*the dynamic nature of the m-commerce environment requires a focus on usability that goes beyond the device itself*" (Burger 2007; Tarasewich et al. 2002, p. 45; Lu et al. 2014; Park et al. 2014; Sanakulov and Karjaluoto 2015). Thus, different theoretical concepts need to be integrated to understand technology and how it is deployed.

Shifting the focal point to the second theoretical block of this study, the subject of service innovation has received ample attention from scholars (Berry et al. 2006; Droege et al. 2009; Miles 2001; Sundbo 1994; Toivonen and Tuominen 2009; Lusch and Nambisan 2015) and has led to the emergence of three major perspectives on the service innovation phenomena: assimilation, demarcation and synthesis. Firstly, assimilationists discern innovation in services within a manufacturing context, where technologies are the main driver of new value creation (Barras 1986; Droege et al. 2009; Miles 2001). However, this view has been widely criticised due to its failure to address issues such as the peculiarities and diversity of service activities, which have become a primary focus of the second stream of studies – demarcation (Den Hertog 2000; Djellal

and Gallouj 2001; Gadrey et al. 1995). Recently, a new direction in service innovation research has emerged that has forced academics to reconsider the classical model of innovation (Drejer 2004; Gallouj and Weinstein 1997). This synthesising approach converges service idiosyncrasies and the technological principles within a single integrative framework. Hence, the divergence of conceptual issues within a theoretical service innovation map originates from the academic community's failure to construct a common definition and understanding of the service innovation concept.

Moreover, despite a substantial number of studies examining service innovation (Den Hertog 2000; Djellal and Gallouj 2001; Gadrey et al. 1995; Drejer 2004; Gallouj and Weinstein 1997; Berry et al. 2006; Droege et al. 2009; Miles 2001; Sundbo 1994; Toivonen and Tuominen 2009; Carborg et al. 2014; Kindström and Kowalkowski 2014), the article by O'Cass et al. (2013, p. 1060) states the following:

> *"Paradoxically, while service [sic] are identified as a major priority for economic development and innovation is seen as a major driver of business success, service innovation is still an area with limited theory and empirical work being undertaken."*

O'Cass et al. (2013) explicitly stress that past studies have been of a conceptual or explanatory nature by adopting product innovation measurements for service settings. Kindström and Kowalkowski (2014) agree with O'Cass et al.' (2014) view. As a result, the idiosyncratic nature of services through simultaneous production, delivery and consumption of service outcomes, as well as the ad hoc nature of service processes, has not been captured. To breach the gap in existing studies, qualitative instead of quantitative research needs to be applied.

1.3. Gaps in the Literature

Innovation is prioritised by many firms aiming at achieving and sustaining competitive superiority. The classical approach to defining and conceptualising innovation views manufacturing firms as the only locus of innovation, where technological competence is considered to be a priority within the resource portfolio and the major stimulus of new value creation (Rogers 2003). However, the integrated approach expands the definition to include organisational resources and processes for service production and delivery (Rieple 2004; Droege et al. 2009; Lusch and Nambisan 2015). This is particularly key in service firms, as innovation activities involve adding new and enhancing existing services, as well as improving service delivery and customer communication processes,

all of which are termed ‘innovation practices’ (De Brentani 1989; Berry et al. 2006; Chen and Tsou 2007). Apart from producing original and tangible artefacts, manufacturing firms can also innovate by embedding additional customer service or having outstanding and creative management style in place. Hence, Droege et al. (2009) and Lusch and Nambisan (2015) stress the growing interest towards an integrated perspective on studying innovation by capturing manufacturing and service contexts. The increased role of service activities within the service sector as well as manufacturing has brought into focus issues concerning the process involved in creating new experiences, where service peculiarities and the ‘fuzzy’ nature of the service process leads to the reconfiguration of the classical approach in defining and conceptualising innovation (Droege et al. 2009; Miles 2001; Gremyr et al. 2014). Thus, further studies on service innovation practices (SIPs) employing an integrated view of the product and process setting are critical.

There are no doubts in the current research about the abilities of service firms to innovate; however, systematic attention to service innovation is not yet a priority among service firms. Such an issue stems from gaps in developing a clear definition of innovation in the services context, as well as lack of conceptual understanding of SIPs (Miles 2001).

Nonetheless, technology adoption in synergy with other organisational resources leads to SIPs (Miles 2001; Janssen et al, 2014 Kindström and Kowalkowski 2014), although the scope of technology itself has changed. In particular, mobile technology has been neglected as a distinctive technology, as it has been masked under the single conceptual title ‘information technology’ (IT) (Liang et al. 2007; De Reuver et al. 2008; Feijóo et al. 2009; Murphy et al. 2014). Although the consumption of mobile services and content implies Internet connectivity, true ubiquity and mobility, which distinguish mobile technology from fixed networks and stationary desktop IT provisions, imply the deployment of mobile devices anytime and anywhere, regardless of a connection to a wireless network or the Internet (Balasubramanian et al. 2002; Xiaojun et al. 2004; Lu et al. 2014; Park et al. 2014; Sanakulov and Karjaluoto 2015).

Existing studies (Rochford 2001; Hameed 2003; Lee et al. 2007; Donelly 2009; Talati et al. 2012; Quigley and Burke 2013; Heilig and Vob 2015) have found that mobile technology provides a quick response to market needs. Nevertheless, studies around mobile technology deployment and adoption (Hameed 2003; Donelly 2009; Sanakulov

and Karjaluoto 2015) mostly address the deployment and adoption process from a consumer perspective rather than from a business perspective and focus on (1) employee mobility (Rochford 2001; Lee et al. 2007; Derks et al. 2015) and (2) supply chain management (Eng 2006; Wang et a. 2015). Despite some previous research, conducted by a number of scholars such as Balasubramanian et al. (2002), De Reuver et al. (2008) and Feijóo et al. (2009), Eastman et al. 2014, there is a lack of empirical studies determining whether mobile technology is a driver of innovation in service firms and a tool for introducing new products and solutions to the market.

Another concern of the extant study of mobile technology and corresponding innovation is a narrow focus on technicality. The majority of studies on the use of mobile technology focus on the technical nature of mobile devices despite the fact that the dynamic nature of the mobile business environment requires a focus on mobilisation and usage of mobile technology – the deployment of mobile technology (Tarasewich et al. 2002). In sum, understanding how mobile technology is deployed, and establishing its role in service innovation, is a critical and fundamental requirement.

1.4. Setting up the Context

The scope of this research in terms of the service sector lies within the creative industries. This sector contributes substantially to the global economy, especially in countries such as the UK, US, Germany and Japan (Handke 2007). The creative industries, according to Bilton (2011, p. xiii), *"are the success stories of the new century"*. In 2015 the UK's Department for Culture, Media and Sport (DCMS) reported that the UK creative industries contribute £76.9 billion per year to country's economy. According to a report prepared by the UK Technology Strategy Board (TSB) (2013), creative industries have a significant impact on the UK innovation infrastructure, starting with the provision of skilled workers and ending with the introduction of innovative outcomes. Perhaps, one could argue, '*So do other industries*'. However, not all industrial clusters deliver goods and services that are used as inputs into innovation processes. To summarise, Handke (2007, p. 1) states that the context of creative industries is a "*hotbed for new ideas and commercialisation.*"

The origination and implementation of ideas and creativity have become an issue of concern for businesses across the whole spectrum of economic activities. In current hypercompetitive and rapidly changing environments, only continuous innovation leads to sustainable competitive advantage. As a result, constant knowledge creation is

considered to be a priority task within organisational processes where the management of creativity is "*central to the current popularity of creativity-led… enterprise strategies*" (Foord 2008, p. 91). However, the complexity of the term 'creativity' and the heterogeneous nature of firms, which are regarded as the creative industries, challenge the researchers who wish to disclose the process of creativity generation in industries (Miles 2009).

1.4.1. Defining creative industries

The nature of the creative industries is considerably ambiguous (Galloway and Dunlop 2006; Miles 2009). Davies and Sigthorsson (2013, p. 1) claim that "*the creative industries don't exist*" as a universal industry, because different cultures perceive creativity differently. Due to the broad concept of the key element, namely creativity, which arguably all innovative industries pursue, creating a clear definition and segmentation are problematic tasks. Nevertheless, the DCMS (2002, p. 4) provides a definition which is widely supported among practitioners and academics (Bilton 2011; Davies and Sigthorsson 2013):

> *"Creative industries are those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth creation through the generation and exploitation of intellectual property."*

However, even among UK policymakers, consensus regarding a suitable terminology has not been reached, as 'creative industries' and 'cultural industries' are used interchangeably (Galloway and Dunlop 2006). Drake (2003) states that both terms have some distinctive features, and so clarification will support the better comprehension of the research domain.

An original definition of cultural industries includes exclusively industrial forms of cultural production such as film, broadcasting, music and publishing (Galloway and Dunlop 2006). Nevertheless, the modern perception of creative industries is built upon notions such as art, entertainment and culture (Potts 2009). In addition, Bilton (2011) emphasised the complementary nature of relationships between 'creativity' and 'business'. DCMS's (2002, p. 4) integrates Potts's (2009) and Bilton's (2011) notions and distinguishes thirteen sectors which represent the creative industries:

> *"[A]dvertising, architecture, the art and antique market, crafts, design, designer fashion, film and video, interactive leisure software, music, the*

performing arts, publishing, software and computer services, television and radio."

According to the DCMS definition, two main factors play a crucial role in the creative sector, namely creativity and intellectual property. However, it is also arguable that any innovative industry, including ones which produce technologies and scientific knowledge, possesses similar components. Therefore, the DCMS definition is too generic for any clear segmentation or for the purpose of empirical investigation. Taking into account the technology-centred perspective of this research, the author adopts the DCMS definition. However, in order to establish consistency throughout the research, there is a need to clarify the nature of creativity as well as to supplement other indicators of the creative industries interface.

Firstly, creativity within the DCMS definition has been strictly determined as being in the hands of the individual. Banks et al. (2002) argue that innovative outputs are delivered through the social, structural and organisational transformation of the creative concept which, overall, represents a collective 'state of mind'. Moreover, Müller et al. (2009) propose a three-dimensional view on creativity which consists of the creativity of the individual[2], creativity of the product[3] and creativity of the process[4]. A crucial task of this research paper is to analyse creativity as an interface between all three creativity indicators, whereby it should be assumed that creativity can be inherent in the output (product or service itself) or embedded within the process, production or delivery of the outcome. Creativity represents a set of activities that result in the exploration of novel outcomes.

Secondly, the significance of intellectual property (IP) within the creative sector highlights the role of digital technologies that allow creators and organisations to benefit from the economic and moral value of products and services, as well as to

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[2] Creativity of the individual – "*ability to generate novelties and respond to challenges by finding new solutions*" (Müller et al. 2009, p. 152).

[3] Creativity of the product – "*the degree of uniqueness of a product or service compared to other products and services offered in the market*" (Müller et al. 2009, p. 152).

[4] Creativity of the process – "*the way an enterprise delivers its products and services to customers*" (Müller et al. 2009, p. 152).

follow a traditional *"innovation trajectory"* (Foord 2008; Galloway and Dunlop 2006; Rogers 2003). In most cases in the creative sectors IP takes place through copyright rather than industrial forms such as patents. However, the issue of IP is also closely related to the question regarding identifying the boundaries of intellectual property within creative industries.

The author regards the proposition of Galloway and Dunlop (2006) relevant, in that creative industries' products and services have to generate and deliver a symbolic value which is based upon artistic or expressive needs. In order to continue to maintain a logical flow of thought, the author extends the DCMS definition by including creativity that has a scientific and/or business value in addition to its aesthetic utility, as illustrated by computer and software services. As a result, the products and services of the creative sector might communicate cultural as well as functional meanings.

Finally, the most significant contributions made by creative firms are solutions to problems which arise from social, economic and technological changes, but which are also shaped through the prism of such transformations:

> *"Creative industries produce art and culture and sometimes entertainment... They also produce the dynamic service re-coordination of socio-cultural and economic order to the ongoing growth of knowledge process."* (Potts 2009, p. 143).

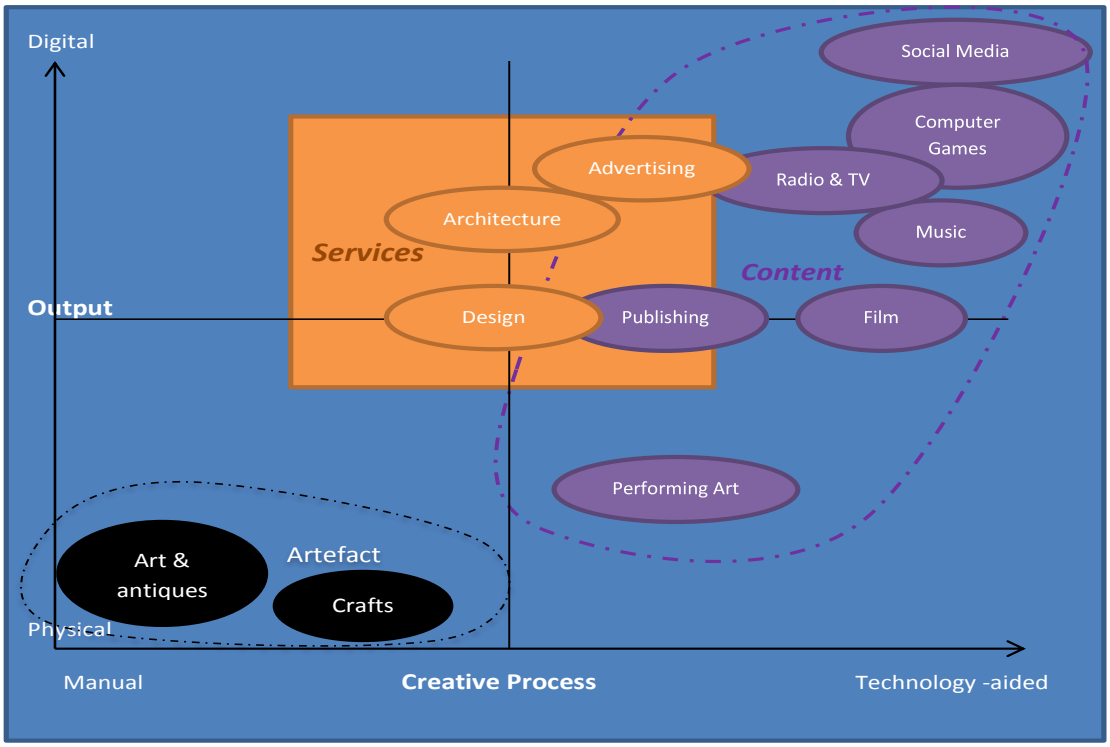
Examples illustrating Potts' statements are a large amount of cases where the implementation of digital technologies and mobile technology has resulted in a substantial amount of radical and incremental innovations, such as new creative content delivery methods, online television and digital mobile broadcasting (DMB), online publishing and the development of the new players specialising specifically in mobile or online content creation (Davies and Sigthorsson 2013; Miles 2009). Hence technological transformations allow the creative industries to produce solutions and outputs (integration within the processes or integration within the products and services) and to be transformed structurally. The creative industries are, therefore, heterogeneous within processes, operations and strategic priorities. For instance, some advertising firms can operate as teams and some – as an individual stand alone entity (freelancing); advertising firms do require creative skill sets but the also require other competences to deliver innovative solutions and run the business on a daily basis. Hence, the author

needs to focus the research setting in attempt to find and explore the relatively homogeneous group of firms.

1.4.2. Segmentation of creative sector

Segmenting the creative industries will narrow down the context of this study. According to the TSB (2009), clusters of creative firms can be divided into three sub-categories: content, services and artefacts (see Figure 1 below).

Figure 1. Segmentation of the Creative Industries



Source: TSB, 2009. *Creative Industries: Technology strategy 2009-2012*. Swindon, UK: The Technology Strategy Board, p. 7.

There is no clear clarification on the principles on which segmentation is built. The production process, where content providers receive the commercial value of goods through the copyright mechanism, is the only notion explained (TSB 2009). On the other hand, creative firms representing service providers and artefact producers manage the production process upon the terms of contracts that are mutually agreed with clients. Therefore, the TSB classification appears to be a useful tool for the development of a policy on IP rights protection.

Throsby (2001) has also proposed 'a three-fold classification' of the creative sector. The central role is devoted to creative arts that generate an aesthetic meaning which shapes individual norms and beliefs, namely music, dance, theatre, literature, crafts, visual art

and multimedia. Both Throsby (2001) and the TSB (2009) group advertising, architecture and design within one group or cluster. According to Throsby (2001), these companies operate within the business and knowledge-service sector rather than the cultural world, but they do use culture as an input within the production system as well as deliver *"joint goods and* services*"*, which are based on individual judgements regarding functional, symbolic or cultural meanings.

Classification across countries differs slightly, and there is no consensus on any unique typology. For instance, Canada, New Zealand and Australia are all in line with the UK approach; however, the US, which is one the top-ten exporters of creative goods and services, defines the creative industries as those which are "*in the production and distribution of the arts*," namely performing arts, visual arts and photography, museums and collections, film, TV and radio, publishing, design, art schools and services (Foord 2008, p. 95).

The author clarifies the choice of the segment, which she has adopted in subsection 1.4.6.

1.4.3. Creative industries value chain

Comprehending the basic components behind the organisation of creative industries' production systems will simplify the conceptualisation of the service innovation process. First is the concept development and origination stage, which is where creativity transforms into reality; therefore, the initial step is named 'concept creation' (TSB 2009; Higgs and Cunningham 2008; Bilton 2011). This first stage obviously plays a strategic visionary role which has to be embedded within the second operational step of actual production (Higgs and Cunningham 2008; Bilton 2011). Afterwards, in the same way as any value chain system operates, the delivery and consumption of actual goods and services take place. However, the dynamism and uncertainty of market conditions has resulted in the re-consideration of purely linear business models (TSB 2009), whereby all elements have to be analysed within the whole system of interaction among the main indicators. As a result, the research needs to be integrated within the space where the strategic and operational levels of SIPs converge.

1.4.4. Strategic priorities and opportunities

Changes in business landscapes, due to the digitisation of consumption and production processes and changes in the roles of customers and companies, have created many opportunities for as well as challenges to creative clusters. Moreover, these changes

have resulted in reshaping the sector's structure, which represents an open network of actors where the establishment of close and direct interaction has become a crucial element of survival (Handke 2007).

Technology-driven Trends

The emergence of the Internet and the diversity of digital platforms have had a specific influence on the internal organisation of the creative sector. It is obvious that some of the key players, such as software developers and game developers, are directly involved in the application of information and communication technologies (ICT) within production processes (UK Trade & Investment 2009). In addition, broadband and mobile connections have driven the evolution of new players, such as online and mobile content developers, which operate entirely through the creation of services that are communicated and consumed via network technologies (TSB 2009). As a result, a large proportion of small entrepreneurial businesses operate in creative industries.

According to the Technology Strategy Board (2009), ICT has three major roles in the creative industries business:

- As an enabling mechanism embedded within products and services, for instance application software or content for mobile platforms
- As a business management and organisation tool. Creative industries operate within one the most flexible labour markets; therefore, there is high demand for building an effective workflow architecture through mobile connectivity (Handke 2007)
- As a new communication tool that establishes direct, close and personalised relationships with consumers.

Moreover, shortened product/service lifecycles have forced the transformation of business priorities, where production has become a secondary activity after research and development (R&D) (Bilton 2011). New creativity creation in terms of a service or an intangible information good requires efficiency in project-based co-operation as well as flexibility within business networks, which has been successfully realised through the support of ICT (TSB 2009). Furthermore, only digital solutions allow media content to obtain any form of commercial value (Handke 2007).

Additionally, advances in ICT have led to unique opportunities to 'sense' the market as well to be innovative on a continuous basis. Firstly, sensor technologies such as cameras

and global positioning system (GPS) chips provide creative industries with the opportunity to deliver contextualised "immersive experiences" (TSB 2009). The personalisation of services and products is built upon individual profiles and location data, while artificial intelligence technology has entirely transformed the gaming industry (TSB 2009).

Operational and functional changes in ICT, such as portability and multifunctionality, have resulted in the high usage rate of personal digital assistants (PDAs), mobile phones and Netbooks. These digital tools provide possibilities for "*the mobility of applications and services.... and for greater productivity and reduced downtime*" (TSB 2009, p. 27). Finally, the production process has been virtualised through the integration of resources, business infrastructure, delivery platforms and ICT support systems. Overall, technologies drive the exploration of new value-added opportunities within the creative industries, improve the quality of service and successfully meet the needs of constantly changing demands (Handke 2007).

Social Influences

Technological changes have also triggered the transformation of the social environment. The emergence of social networking and accessibility to wider sources of knowledge has shifted power to the hands of consumers. Collaboration has become the most significant approach to sustaining competitive advantage through continuous and open innovation (NSW 2008; Miles 2009). Furthermore, creative industries, with the support of end-users, are "*shaping the development of the technology*" via the design of application programing interfaces (APIs) (TSB 2009, p. 26).

Consumers have become key actors within creative industries' production systems. The TSB (2009) named this phenomenon a "mash-up or re-mix culture," where an individual's self-expression is discerned as a valuable input into user-generated content and 'quasi-public' products and services (Handke 2007). Direct dialogue with end-users has also advanced a system of feedback, whereby the simulation and testing of services occurs immediately and more effectively. Nevertheless, intensive user-producer interaction in the creative industries presents a number of challenges to firms, in order to reassure the customer about personal security and the non-infringement of personal privacy. Moreover, business models need to be reconsidered, in order to ensure the protection of copyrights and authorship (Handke 2007; Miles 2009; Bilton 2011).

1.4.5. Creative industries in the UK

The production and export of cultural goods and services offer a significant contribution in terms of gross domestic product (GDP), employment rates and the subsequent economic growth of the UK. Increasing governmental concerns regarding the regulation and support of entrepreneurial efforts have placed the UK amongst the leaders in the creative sector arena – certainly the largest operator in the European Union (EU), the UK's creative services industry exports more than £16 billion (DCMS 2009; UK Trade & Investment 2009).

The UK's creative sector represents a multi-diversified portfolio of industries, where the leading role is allotted to software, computer games and electronic. This is not a surprising finding, particularly in view of the fact that the cultural characteristics of the British society are replete with independent thinking processes, which in turn encourage originality and breakthrough ideas (UK Trade & Investment 2009). The UK plays a pioneering role in driving and advancing the digital revolution through the globally recognised success of digital broadcasting in radio and television (UK Trade & Investment 2009). As a result, investments in high technology and innovation are two major priorities in the strategic agenda of the UK's creative sector.

In addition, creative UK companies operate successfully on a global scale, by setting up multinational conglomerates and partnerships with technologically and ideologically advanced nations. "*The UK creative sector… a true catalyst for change*" (UK Trade & Investment 2009, p. 2).

The defining nature of creative industries, as seen nowadays in countries such as Australia, New Zealand, Singapore, Hong Kong and Canada, is framed by the UK government's DCMS, "*activities that have their origin in individual creativity, skill and talent*" (Ruutu et al. 2009, p. 37). The creative process and its social benefits are the main elements within the production system, according to UK regulation. Therefore, entrepreneurial efforts and innovative programmes are well-manifested and supported on an institutional level (UK Trade & Investment 2009).

An analysis of the nature of creative industries, based on the principles proposed by the Anglo-Saxon economic system, shows the cutting-edge role of the creative sector within a global business arena in which innovation, collaboration and, most importantly,

individual creativity, skills and talent represent a powerful segment of the global economy. Due to the so-called 'creativity crisis', creativity element management particularly is deemed part of a strategic portfolio for business enterprises, and creative industries uniquely place emphasis on such practices (Bronson and Merryman 2010). It is absolutely crucial to comprehend how creativity, which is developed on an ad hoc basis, is embedded within organisational culture and routines in order to drive innovation. Despite the fact that creative industries are technologically innovative due to the wide application of new IT, innovation tracking approaches designed for industrial production challenge application within the creative industries context (Miles and Green 2008). The service innovation stream of research, a fundamental part of this paper, faces a similar problem. The unique feature of the innovation process in creative as well as service firms is the interaction interface, where the market is a co-producer rather than just an input in terms of market intelligence (Den Hertog 2000; Miles and Green 2008). Therefore, the author intends to employ qualitative research techniques, distinct from manufacturing survey instruments, in order to construct a generalised picture of the service innovation process found in creative industries.

1.4.6. Creative firms investigated in the this study

Based on the above discussion (subsections 1.4.1. – 1.4.5.) the author confirmed the contextual setting for this study and explains the choice in this subsection. Firstly, the choice of the industry is based on the following arguments:

- Parallelism between creativity and innovation: innovation plays a dual role through the commercial realisation of the invention process, where creativity is considered a driving factor (Bakhshi and McVittie 2009). Although, Davies and Sigthorsson (2013) and Bilton (2011) agree that innovation is a critical elements within the creative firms' processes, which initiates and drives the creativity. Potts (2009) argues that the connection and inter-relationships between the two objects remains hypothetical and therefore requires empirical understanding;
- Literature (Davies and Sigthorsson 2013; Bilton 2011; TSB 2009) indicates the significance of technology alignment within production systems, from the internal tools of workflow organisation to multi-channel interaction with consumers. Nevertheless, this is evident in the technology-intensive firms, i.e. computer games and social media sectors. Similar patterns are yet to be discovered in less technology-intensive firms, i.e. advertising.

- Overall, an investigation into new service creation within the context of highly competitive, dynamic and technology-driven creative industries will open up new vistas for the deployment of mobile technology, its management and the marketing of service innovation.

Secondly, the author's choice is narrowed to a specific selection of the specific segments using the TCB (2009) segmentation of creative industries:

- Mobile technology, in particular, is widely deployed by creative industry actors, such as publishing and software developers, where the new medium is considered a delivery platform for services (Bunz 2010; Greenslade 2009). It is questionable whether the actual service providers (as segmented by TSB (2009)) do deploy mobile technology. If so, to what extent and how?
- Hence, the author decided to focus on service provides, which are represented by architecture, design and advertising firms.

The TSB (2009) segmentation of creative service provides share conceptual similarity (these firms solve clients' problems by providing ad hoc knowledge-based services, the majority of which are intangible) and to some extent structural similarity (most firms operating within these three distinct areas are small and medium in size (SMEs) and have a project-based process orientation). It is important to reflect on these two similarities.

Firstly, SMEs are generally regarded as enterprises which employ *"fewer than 250 person"* (European Commission 2005, p. 14) and which, based on the Bolton Committee' economical definition, are:

> *"…managed by owners and co-owners in a personalised way and not through the medium of a formalized management structure; and are independent, in the sense of not forming part of a larger enterprise"* (Abbrey et al. 2015, p. 40; Deakins and Freele, 2009, p.30).

SMEs accounts for nearly 99% of all enterprises in the European Union (European Commission 2013). In the UK SMEs represent 99.3% of all private sector businesses (Department for Business, Innovation and Skills 2014). Moreover, SMEs contribute to the UK's economy by employing around 15.2 million people and producing a combine turnover of £1.6 trillion (facts are true for 2014, Department for Business, Innovation and Skills 2014).

Secondly, the project-based work emphasized by Bilton (2011) as a key distinctive structural characteristic of the creative industries. This is turn project-based work results in multitasking across the creative firms because most enterprises in the creative industries *"start small, often based around one or two individuals with an idea"* (Bilton 2011, p. 27). Multitasking also results in the firm leaders playing different roles in the creative industries.

Overall given the valuable contribution of the SMEs and the creative industries (sub-section 1.4.5.) to the UK's economy and in order for the author to maintain the consistency across empirical results, this study focuses on a single-country - the UK.

Nevertheless, all three segments of the creative service providers (architecture, design and advertising firms) represent the heterogeneous group of firms because of the nature of service they provide. Hence, studying service innovation practices within all three segments can limit the consistency of results across firms.

To select the homogeneous group of firms, which share all structural and conceptual characteristics (being SMEs and solving clients' problems by providing ad hoc knowledge-based services, the majority of which are intangible), the author decided to find an empirical examples of firms, which provide cross-shared types of services. Luckily, this was a simple task to complete. Today marketing and advertising firms which are usually clustered as the knowledge-intensive firms, due to technological transformations of the processes and the nature of services these firms provide offer more digitally-oriented services that include digital design and web-architecture. Reflecting on the segmentation presented in Figure 1, the firms listed and described in the previous sentence on a conceptual level are located in-between advertising, design and architecture segments.

Hence, the context chosen for this study is the following:

> *the UK's creative SMEs which deliver marketing, advertising, digital architecture and digital design services*

1.5. Research Aim and Objectives

The scarce amount of studies focusing on a detailed analysis of mobile technology deployment in business settings, and linking the deployment of mobile technology to innovation in services (the literature suggests that services including process and mobile

technology primarily transform operational processes in organisations), motivates and rationalises this study.

The aim of this thesis is:

> To investigate the role of mobile technology capabilities in creative service SMEs' innovation practices.

Four objectives address this aim:

> To discover how creative service SMEs deploy mobile technology;
> To conceptualise mobile technology capabilities;
> To understand service innovation and define the service innovation concept within the context of creative service SMEs;
> To explore whether, and to what extent, mobile technology capabilities stimulate and facilitate service innovation practices (SIPs) within the context of creative service SMEs.

By meeting the above listed aim and the four research objectives, the author aims to build a substantive theory which explains the role of mobile technology capabilities in SIPs of creative service SMEs. The theory is considered to be a substantive in a scope because, firstly, the specific contextual setting was pre-determined (creative service SMEs delivering marketing, advertising, digital architecture and digital design services), and, secondly, the theory is grounded in the empirical data which explains the role of mobile technology capabilities in SIPs in that particular setting. In doing so the author aims to contribute to the following theoretical conversations, information systems domain (Orlikowski 1992, 2000; Orlikowski and Gash, 1994) by exploring and conceptualising mobile technology deployment in creative SMEs (Carborg et al. 2014; Kindström and Kowalkowski 2014), strategic management domain by examining relationships between technological capabilities (in this study mobile technology capabilities) and SIPs in creative SMEs (Macpherson et al. 2003; Elbeltagi et al. 2013; Pimmer and Pachler 2013).

1.6. Structure of the Thesis

This thesis presents completed research in relation to the achievement of the objectives outlined in this chapter. This chapter, Chapter 1, introduces the overall study. Research problems and gaps in the existing literature are briefly discussed to position this study against established scholarly work. Most importantly, the aim and objectives are set out,

in order to guide the story of this study in the following chapters. Finally, creative industries are described to not only present their contextual relevance to the research problems of this thesis but also to justify final decisions on contextual boundaries that enable the researcher to achieve the research aim and objectives.

The literature review is presented across two chapters, Chapter 2 and Chapter 3, both of which are structured in a logical manner to present a broader perspective on a phenomenon and then to follow it up with a narrower approach bearing in mind the conceptual interrelationships between two distinct phenomena. Each chapter reveals gaps for further investigation and ends with research questions to be addressed through empirical research. Hence, to present a broader perspective, Chapter 2 first reviews scholarly work on mobile technology and its deployment for personal and business purposes. Then, a theoretical approach to the best fit 'technology in use' concept, a capability approach, is introduced, thereby providing the conceptual evolution of this theoretical perspective and justifying the relevance of the chosen approach to mobile technology deployment. Research questions end Chapter 2 by combining research problems identified within the broader subject of mobile technology with a narrowed theoretical approach, in order to explore any identified problems. Chapter 3 follows the same logic as Chapter 2 and first critically discusses the subject of service innovation, including the definition and theoretical anatomy of studies focusing on innovation in services. Research problems are made evident at this stage. Then, narrowing down our conceptual understanding of service innovation to fit the main subject, mobile technology deployment is presented. Research questions end Chapter 3.

Chapter 4, firstly, introduces, justifies and explains the methodological choices, the author has chosen. Secondly, Chapter 4 provides a detailed discussion around the implementation of the chosen methodology, a grounded theory. The implementation includes data collection and data analysis.

Chapter 5 presents findings of this study, the results of the axial coding stage in particular where main categories are presented. These main categories are then integrated to present a substantive theory developed in this study – the selective coding stage of the data analysis process. Chapter 6 presents this the developed theory as well the discussion of main results against existing scholarly work.

Finally, Chapter 7 concludes this thesis by summarising the results, proposing implications, specifying the contributions and originality of this study and ending with limitations alongside suggestions for further research.

Chapter 2. Literature Review I: Mobile Technology and its Capabilities

2.1. Overview of the Chapter

This chapter reviews existing scholarly work around mobile technology and its use. The purpose of the literature review is to expand knowledge around the current state of the literature on mobile technology and to identify a theoretical basis against which to proceed further with grounding theoretical knowledge in empirical data. Terms and their definitions are critically discussed, but the researcher does not end the discussion with her own clear definition of terms and concepts. Ultimately, this thesis uses the grounded theory method with the purpose of empirically defining the terms and comparing them to the existing literature. Such a comparison and final definitions are provided in Chapter 8, discussion of findings.

This chapter initially discusses studies focusing on mobile technology by examining definitions, categorisations and applications in real practice. As part of this discussion, the existing literature emphasises a key debatable issue – whether mobile technology is unique in its technology or an extension to fixed networks and stationary desktop IT. In reviewing academic and practitioner papers, it becomes explicit that understanding the true nature of mobile technology by focusing purely on the technical aspects thereof means neglecting the more critical and distinct phenomena of exploiting, using or, in other words, deploying mobile technology. Hence, in order to proceed with the research and to resolve the identified debate, a technology-in-use perspective needs to be reviewed and contemplated. This technology-in-use perspective is grounded in the capability approach, a theoretical perspective borrowed from strategic marketing and management domains. A capability approach is therefore explained, with particular focus on previous studies that have adopted it to study fixed networks and stationary desktop IT deployment. Research questions emerging from the extensive review of the literature, and which need to be addressed in this thesis, complete this chapter.

2.2. The Nature of Mobile Technology

To conceptualise mobile technology capabilities precisely, it is crucial to understand the underpinning concepts and fundamental nature of mobile technology – in terms of technical features and, most importantly, benefits and opportunities which it enables:.

Balasubramanian et al. (2002, p. 349) state that:

> *"From a theoretical perspective, it is necessary to separate the concept of mobile technology capabilities from its underlying technologies to arrive at a stable conceptualisation that is not subject to the volatility of short-run technological changes."*

According to Rochford (2001, p. 11), "*device and network diversity*" represents a bottleneck in the successful implementation of mobile technologies for modern business activities. Ultimately, numerous mobile technological platforms, networks and devices that constitute the mobile technology infrastructure possess different functionalities, and therefore they behave in a distinctive ways.

The literature distinguishes between two perspectives when defining mobile technology. The first (Nielsen and Fjuk 2010; Tarasewich et al. 2002; Murphy et al. 2014) considers mobile or wireless[5] devices as "*an alternative way to interact with a traditional Web site, albeit in a different format or on a more limited or constrained basis*" (Tarasewich et al. 2002, p. 43). The second perspective, held by an opposing group of researchers (Balasubramanian et al. 2002; De Reuver et al. 2008; Feijóo et al. 2009; Fortunati 2001; Jarvenpaa 2000; Jarvenpaa et al. 2003; Jarvenpaa and Loebbecke 2009; Lu et al. 2014; Park et al. 2014; Sanakulov and Karjaluoto 2015) who represent the majority nowadays, believes that mobile services are novel, unique and fundamentally different. Hence, technology underlying mobile services is fundamentally different to other existing IT disciplines, particularly fixed networks and stationary desktop IT. As explained by Feijóo et al. (2009, p. 285):

> *"Mobile is not merely another platform for contact distribution and to view simply as the transformation of existing content into the mobile realm is to neglect some of its most promising aspects."*

The deployment and use of mobile technology provides distinctive and unique experiences as compared to electronic commerce (e-commerce) business opportunities, which imply the use of fixed networks and stationary desktop IT. This entirely new dimension offered by mobility drives new strategic and operational opportunities for companies (De Reuver et al. 2008).

[5] Mobile and wireless terms are used interchangeably by researchers pursuing this point of view.

Xiaojun et al. (2004, p. 205) define mobile technology as:

> *"A broad category that includes all devices, protocols and infrastructures that allow one to communicate, interact and exchange data with an individual or system anywhere and anytime."*

The definition stated above captures the essence of technology. Nevertheless, based on the opposing group of researchers' arguments, such a definition neglects the idiosyncratic nature involved in deploying mobile technology. The next three subsections form a clear understanding of mobile technology categories, in order to reflect on technical differences and similarities and identify characteristics or features that describe the mobile technology experience.

2.2.1. Categorisation of mobile technology

De Reuver et al. (2008) and Pauleen et al. (2015) present a detailed analysis of mobile technology through three broad categories (a detailed commentary is provided in Table 1):

(1) *Mobile or wireless networks* as opposed to fixed networks. This group focuses on accessibility and distinguishes, firstly, cellular network technologies, and secondly, short-range access networks. Due to variances in accessibility, each standard requires specific protocols, in order to enhance the mobile experience and connection.

(2) *Mobile Internet.* This group consists of middleware and applications, which allow mobile devices to browse the Internet.

(3) The third category represents the variety of *mobile devices* used to connect to the world whilst on the move. The range of devices that connect to mobile networks and the mobile Internet covers simple portable music or video players, mobile or cell phones, smartphones with an Internet access functionality, handheld or laptop computers and wireless or non-wireless.

Table 1. Categorisation of Mobile Technologies

Category	Representative Types	Commentary
Mobile or Wireless Networks (Karjaluoto 2015)	Cellular network technologies: GSM (Global System Mobile), GPRS (General Packet Radio System), HSDPA (High-speed Downlink Packet Access), ADSL (Asymmetric Digital Subscriber Line) and IMS (IP Multimedia System), 3G (Third Generation Mobile Broadband), LTE (Long-term Evolution, next generation mobile wireless broadband network system) Short-range access networks: WiFi (Wireless Fidelity) or WLAN (Wireless Local Area Network), PAN (Personal Area Networks like Bluetooth or Ultra Wide Band).	This category is positioned between two ends of the mobility spectrum. Cellular networks with 3G and 4G standards represent opportunities for high-speed connectivity in the broadest context, whereas the connectivity spectrum for short-range access networks is reduced to specific personal areas (Thompson 2009). Due to variances in accessibility, each standard requires specific protocols to enhance the mobile experience and connection.
Mobile Internet (Karjaluoto 2015)	WAP (Wireless Application Protocol), HTTP (Hypertext Transfer Protocol), MWS (Mobile Web Services).	MWS is a specific network architecture which is designed for the application of Web service technologies to mobile devices, the technological standard that aims to be an open standard platform for the development of new mobile services, irrespective of the device itself.
Mobile Devices (Karjaluoto 2015)	Portable music or video players; mobile or cell phones, smartphones with the Internet access functionality; handheld or laptop computers, wireless or non-wireless; least advanced in terms of radio waves coverage (distance is limited): baby crib systems, car locking system; advanced vehicle-mounted technologies; personal message pager devices and PDA (Personal Digital Assistants); business-oriented technology like RFID (Radio Frequency Identification) tags and readers.	Nowadays, there is a tendency to design devices which integrate wireless and non-wireless technical functionalities within generic interactive devices. This is obviously another step in consistency achievement for the provision of mobile services (Tarasewich et al. 2002).
'Soft' Technology (Karjaluoto 2015)	Mobile applications/widgets and software	Soft side of mobile technologies in the form of applications for mobile information systems has completely outperformed software designed for stationary IT. Mobile applications are used both for professional and personal purposes (Donnelly 2009; Jones 2010).

Additionally, the soft side of mobile technology, *mobile applications* or *widgets*, enhance the experience of mobile services, starting from organising workflow on the move and educating, and ending with entertaining (Donnelly 2009; Jones 2010; Lee et al. 2007). The soft side of mobile technology represents a hotbed for the production of innovative solutions on a continuous basis (Burger 2007; Gerstheimer and Lupp 2004; Barrett et al. 2015).

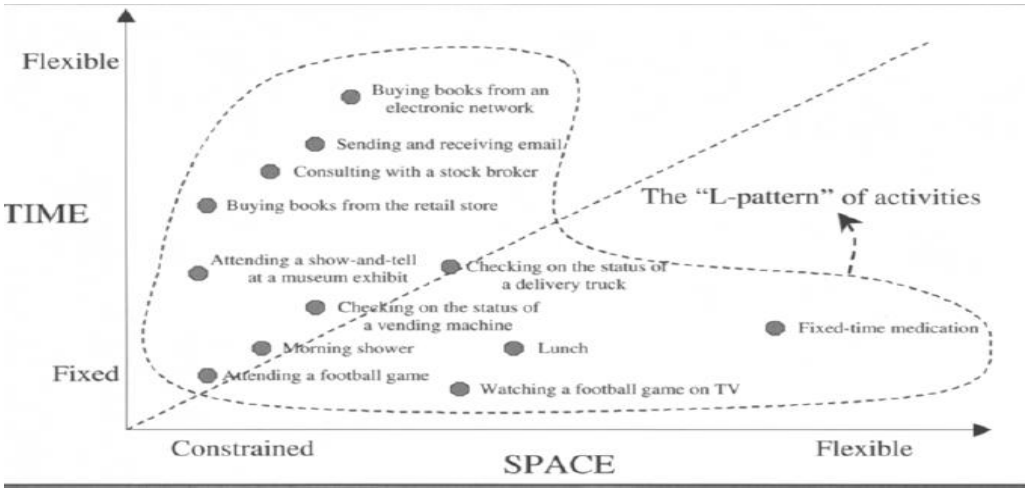
To sum up, the first two categories act as mobile business factories, where devices and widgets act as tracks and machinery for the operationalisation of business activities. A changing trend towards the standardisation of network infrastructures demonstrates a good deal of progress, whereas the diverse range of devices represents a large number of obstacles in terms of usability, such as small screen sizes, limited input capabilities, portability, voice interfaces, memory and other features which result in the limited overall technical functionality of mobile devices (Tarasewich et al. 2002). However, all mobile technology categories do have common characteristics and features, so theoretical models of mobile technology deployment have been developed to reflect practices, irrespective of the mobile technology category chosen to be used and deployed.

2.2.2. Distinctive nature of mobile technology – the essence of mobility

Mobile technology is generally known within ICT as having the key ability to transmit information. Having said that, the remaining question is 'What actually differentiates mobile technology?' Many would say "*its wireless nature*," as wireless functionality quite often embodies the ubiquitous feature that implies independence of time and space. However, Balasubramanian et al. (2002), Xiaojun et al. (2004) and Ngai and Gunasekaran (2007) consider wireless as being a technical function which can be deployed by all types of IT, including fixed networks and stationary desktop IT. True ubiquity entails the consumption of information and services, anytime and anywhere, regardless of a connection to a wireless network. To illustrate this point, listening to music on an MP3 player (a portable music player) does not require connectivity to any network, either wireless or fixed.

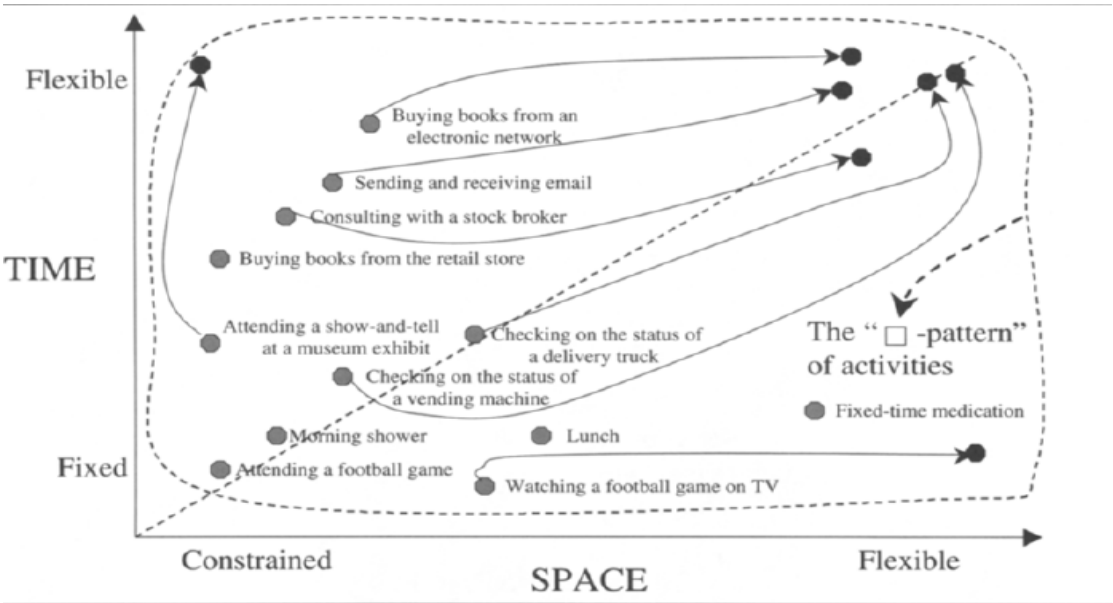
Figures 2 and 3 demonstrate contrasts between two contexts, with and without mobile technology, and the way the mobility or ubiquity dimension transforms traditional daily activities. Balasubramanian et al. (2002) use terms 'ubiquity' and 'mobility' interchangeably.

Figure 2. Space-Time Matrix: Activities in a World without Mobile Technologies



Source: Balasubramanian, Peterson, and Jarvenpaa, 2002. Exploring the implications of m-commerce for markets and marketing. *Journal of the Academy of Marketing Science*, 30 (4), p. 351.

Figure 3. Space-Time Matrix: Activities in a World with Mobile Technologies



Source: Balasubramanian, Peterson, and Jarvenpaa, 2002. Exploring the implications of m-commerce for markets and marketing. *Journal of the Academy of Marketing Science*, 30 (4), p. 352.

All mobile technology "*can relax both the independent and mutual constraints of space and time for many activities*" (Balasubramanian et al. 2002, p. 353). As a result, mobility is a principal feature shared by all mobile technology categories, independent of any underlying technological platform. According to Yuan et al. (2010, p. 126), who undertook research on the application of mobile technology in workflow, mobility "*is*

very important and is the key characteristic that distinguishes mobile from stationary work." The ubiquitous coverage of mobile networks drives enhanced opportunities to contact and be contacted anywhere and anytime. Therefore, time and location are fundamental elements resulting from mobility (De Reuver et al. 2008; Pauleen et al. 2015) – a notion on which the author expands in the next subsection.

Furthermore, ubiquity underpins the framework of e-commerce, meaning that access to information occurs in real time. However, in the context of the mobile world, mobility primarily embraces the ability to interact, communicate and consume information, irrespective of the user's location (Balasubramanian et al. 2002; De Reuver et al. 2008; Liang et al. 2007; Lu et al. 2014; Park et al. 2014; Sanakulov and Karjaluoto 2015). Nevertheless, even real-time functions operate in a refined way in the mobile world context, where ubiquitous availability supports instant access to information and possibilities to work with data, even if business tasks have to be performed remotely and are unarranged (Tarasewich et al. 2002).

Mobility enhances other features of fixed networks and stationary desktop IT, while e-commerce tools provide greater efficiency and improved performance (Rochford 2001; Lee et al. 2007; Yuan et al. 2010; Derks et al. 2015). Proactive computing, automation and responsiveness have turned into reality for firms wishing to benefit by exploiting and "*developing mobile solutions that get to the heart of the user's needs rather than technological constraints*" (Barnes 2002, p. 98). The next features derived from mobility and ubiquity will now be discussed.

2.2.3. Generic functional aspects of mobile technology

All forms of ICT possess a number of common features, but knowing which, is critical to distinguishing truly unique characteristics of mobile technology. The transmission and communication of data underpin all ICT; however as discussed in the previous subsection, mobility, a key and distinct feature of mobile technology, is either grounded in distinct features or drives the emergence of other features. First of all, the remote usage and application of mobile technology simply implies the portability of devices that supply mobile services (Balasubramanian et al. 2002; Rochford 2001; Xiaojun et al. 2004; Pauleen et al. 2015). According to Barnes (2002, p. 103) and Liang et al. (2007), portability is one of the "*key technology trends of the 1990s*," and can be considered the second most important feature of mobile technology. The miniature design of personal devices, which are mostly carried by hand, presents challenges as well as opportunities.

Tarasewich et al. (2002) and Jones (2010) highlight that small screen sizes, limited memory and/or keyboard capabilities represent difficulties in usability for devices such as cell phones or PDAs. On the other hand, portability generates convenience for experiencing mobile services and products (Liang et al. 2007; Xiaojun et al. 2004; Pauleen et al. 2015).

The second aspect, which has truly reached distinctive operational and strategic proficiency, derives from the personal nature of mobile technology and therefore increases proximity to and the reachability of users (Wong and Tang 2008; Xiaojun et al. 2004; Pauleen et al. 2015). Hence, the personalisation feature of mobile technologies creates opportunities to meet the needs and interests of a specific customer (Ngai and Gunasekaran 2007; Eastman et al. 2014). This one-to-one form of customisation is efficient in terms of cost and targeting capabilities by providing a more personalised experience that generates the reachability of an audience through a viral effect (Ngai and Gunasekaran 2007; Xiaojun et al. 2004; Eastman et al. 2015). Nevertheless, personalisation is not a new feature for ICT, as fixed networks and stationary desktop IT enable personalisation, too.

However, the challenge that comes with personalisation, i.e. user privacy, is minimised within the mobile context in comparison to the e-commerce context (Liang et al. 2007; Xiaojun et al. 2004). This is because control over the mobile interaction process, in most cases, is in hands of consumers; technically, no intrusiveness can be caused by mobile technology unless the user permits it. Currently, according to Burger (2007), Sadeghi (2013) and Liu et al. (2013), a secure band of mobile phone users and their devices have become a priority for device and application designers, as well as service providers. Moreover, the consumption of personal services and information, such as personalised content and news or weather alerts, presents a more meaningful and frequent activity, as the relevance level increases due to the key feature of mobile technology, namely its mobility (De Reuver et al. 2008; Pauleen et al. 2015).

Thirdly, an altogether ubiquitous feature allows for greater accessibility within the mobile world, the personal nature of communication channels and control over the interaction and results in enhanced interactivity (Jin and Villegas 2008; Xiaojun et al. 2004; Derks et al. 2015). In fact, technical developments in the sphere of network expansion, coverage and wireless functionality adoption by a broader category of mobile devices has led to the possibility of having "*the Internet in your pocket*" (Barnes

2002, p. 91). As a result, enhanced interactivity maximises communication in terms of content and reachability, thus triggering the increased digitisation of services and products.

In the previous subsection the research briefly discussed two features of mobile technology that originated from the temporal and spatial constraints of its ubiquitous nature. Firstly, localisation derives from the mobility characteristic whereby location tracking poses an effective point for service production, delivery and promotion, hence resulting in supply chain efficiency (Balasubramanian et al. 2002; IBM 2006; Lekakos 2007; Ngai et al. 2007; Weier 2009; Xiaojun et al. 2004; Wang et al. 2015). A location can be measured and tracked, because mobile technology gives us the chance to obtain information on a user's exact location at a particular point in time (Xiaojun et al. 2004; Pauleen et al. 2015). It is obvious that this is a unique aspect of mobile technology in comparison to fixed networks and stationary desktop IT. As a result, through the deployment of mobile technology, businesses can deliver location-specific information to consumers (for instance, hotel or restaurant bookings or traffic reports) and maintain localised interaction with users who are at a certain location at a certain time*:*

> *"Location-specific technologies could present some important pieces of this puzzle and enabling p-commerce applications that get to the heart of adding value in a mobile environment." (Barnes 2002, p. 106).*

Moreover, bricks-and-mortar (B&M) business activities can be supported by location- and time-specific information. Innovative solutions such as NFC (Near Field Communication) help to create unique mobile solutions and services and experience the true 21st-century mobile revolution (Kamran and Juena 2008).

Based on the space-time matrix (Becker 1965), localisation is interrelated with time. Therefore, real-time services in convergence with location tracking lead to proactive and reactive responsiveness to market needs (Tarasewich et al. 2002). Moreover, timely information has greater value within the mobile business world due to the immediacy of interaction, based on the personal nature and location-awareness functions of mobile technology.

All of the above-discussed elements are fundamental underpinnings to mobile technology (Figure 4).

Figure 4. Distinctive Feature of Mobile Technology

However to understand in details how mobile technology is deployed in business settings it is critical to explore how firms take advantage of all unique features of mobile technology. These issues are subject for discussion in the next two subsections.

2.2.4. Mobile business

The ability to comprehend and assess the value of mobile business stands as one of reasons for conducting this research and attempting to develop a theoretical model of mobile technology deployment in business settings, since the majority of current management and information system researchers (Frolick and Chen 2004; Liang and Wei 2004; Ting-Peng and Chih-Ping 2004) have shifted their attention from e-commerce to mobile commerce (m-commerce) issues.

In fact, mobile commerce represents a subset of mobile business and concentrates on commercial transaction activities with monetary value and conducted over mobile networks, the mobile Internet or by using a mobile device (Barnes 2002; Ngai and Gunasekaran 2007; Wang et al. 2015). Purchasing and selling services and products by deploying mobile technology is a principal condition for being involved in m-commerce. Nevertheless, mobile business has just recently entered into an age of progress, whereby the commercial side seems to be of interest to the developing world, with its frugal innovation opportunities and focus on cost reduction (Wooldridge 2010).

The developed world, on the contrary, seems to be lagging far behind the developing world, due to fears over issues such as privacy and security (Wooldridge 2010).

Mobile business, overall, is a matter of considerable interest for this study, because ultimately it represents mobile technology deployment in business settings. The researcher defines 'mobile business' as constituting any business activity conducted through the deployment of mobile technology. Hence, m-commerce is a transactional group of activities only. In addition to the commercial function, the literature (Barnes 2002; Pauleen et al. 2015) identifies the following groups of business practices as part of the mobile business phenomenon:

- Transportation, service delivery and support which can be brought all together in a collective title – fulfilment activity. This category deals with the transmission of information, services, and the establishment of the support systems in terms of mobile applications, connection and interaction on a continuous basis.
- Market-making or information-gathering category, where the core activity is the ability to generate and aggregate information based on mobile technology's beneficial characteristics such as personalisation, localisation and time-relevance.
- Mobile content. This category can be applied to any of the above-mentioned practices. However, in mobile business, and considering the chosen context of this study, creative industries, content creation and delivery represent a specific activity with unique processes behind value generation. This group of activities has become a hotbed of ideas and innovation realisation across all industries and, moreover, brought to attention the collaborative approach to business whereby different players, including end-users, work together to create a unique mobile experience (Feijóo et al. 2009).
- The last group, which is, partially included in every other practice, is customer service. This business function is crucial for any business context, whether it is business-to-business (B2B) or business-to-customer (B2C). Taking into account all the unique features of mobile technologies, the whole function demonstrates a truly distinctive adventure.

2.3. The Concept of Capabilities

Dynamism and uncertainty in today's business environment have brought into focus the issue of sustainability requirements based on organisationally unique capacities. Porter's view (1980) on the adaptation of a firm towards an industrial structure and a business context has evolved into a philosophy where a company itself attempts to shape the strategic and operating environment (Eng 2010). However, the task of modifying a business context lies in the careful assessment and potential development of critical resources and competences which the firm possesses or needs to acquire. A capability approach that belongs to the strategic marketing and management streams of research contemplates the strategic position of a firm, in order to manage and adapt the operational context by taking into account the company's strengths and weaknesses. Capabilities represent certain practices that are embedded within organisational routines and managerial decision-making processes (Leonard-Barton 1992; Day 1994; Winter 2003). For the purpose of understanding what exactly the term 'capability' stands for, the researcher, firstly, critically evaluates the theoretical basis for the capability approach. Then, the researcher focuses on studies specifically exploring and explaining the value of fixed networks and stationary desktop IT capabilities. A review of these studies will help in the research process as well as in discussing the empirical results.

2.2.5. Evolution of a capability approach

The strategic management and marketing literature underpins the capability approach, where attempts are made to identify the sources of competitive advantage for organisations. However, modern marketing theory treats the capability approach as an independent conceptual field, the principles of which are applicable within broad sets of strategic management, marketing and operations management issues (Teece 2007). Based on existing research, the current study identifies three evolutionary stages of the capability research. These three streams represent the linear interconnection between and the natural evolution of academic thoughts on issues of strategic positioning, resource accumulation and utilisation and organisational capabilities development:

1) Competitive positioning perspective, with Porter (1980) and Shapiro (1989) as founders.
2) Distinctive or core capabilities stream of research with its theoretical basis in a resource-based view (RBV) of the firm and a knowledge-based view (KBV), derived from theories on knowledge creation and organisational learning (Day

1994; Day and Wensley 1988; Leonard-Barton 1992; Penrose 1959; Wernerfelt 1984). Winter (2003) names such capabilities as ‘substantial’.

3) Dynamic capabilities research, a new paradigm that intends to reconsider organisations’ strategic priorities, from focusing on the end of the business value chain, firm performance, towards the process and establishment of flexible business models (Jones et al. 2014a; Teece 2007; Teece et al. 1997; Wang and Ahmed 2007).

Despite the fact that each of these theoretical stages differs in how it comprehends the term ‘capabilities’, the essence of treating capabilities as a strategic instrument in developing and shaping the business trajectory and the behaviour of an organisation remains common to all three streams. Nevertheless, each stage has a unique view on understanding, conceptualising and identifying a firm’s capabilities.

The first efforts to determine organisational antecedents to the achievement of competitive advantage were undertaken by Porter (1980). It needs to be made clear that this first stage in the evolution of a capability approach does not directly relate to the current theoretical understanding thereof – this is the first stage towards realising that firms have a unique set of processes that in unique combinations can lead to competitive advantage.

According to Porter’s fundamental principles, the environment in which the firm operates, and not the organisation itself, is the key element in strategic decision-making. Performance outcomes and actions to be taken can be projected on the basis of the industrial structure in which the company operates; hence, the choice of the industry represents an initial stage in conducting business activities and directs the behavioural orientation of organisations within the specific industry (Porter 2004a, 2004b). Industry structure can be mapped in regards to five parameters – rivalry within the industry itself, the bargaining powers of both suppliers and buyers, barriers to entry and the threat of substitution (Porter 1980). A clear understanding of industrial forces allows firms to establish a unique position in their particular environment and to develop or acquire competences, in order to compete successfully with rivals and to subsequently sustain competitive advantage (Porter 2004a). Therefore, the monopolistic ownership of specific capabilities, not available to competitors, is a preferable scenario for profit maximisation.

Shapiro (1989) placed emphasis on the environment in which the firm operates, but with an accent on competitive players. So-called 'game theory' has been applied to the strategic management context and stresses the importance of establishing one's own rules which instruct organisations how to behave with rival firms, i.e. 'manipulate' the environment (Shapiro 1989). Investing in relationship management with competitors seems a 'weird' idea, where the aim is to outperform rivals and protect one's own position. However, the modern network approach and the phenomenon known as co-opetition demonstrate that industrial mapping can be used not only as an analytical tool to assess a situation, but also as an operational mechanism to identify sources of assets and competences that might enhance the competitive advantage of a company (Hooley et al. 2004; Lai et al. 2007; Bartlett and Ghoshal 2013)

Overall, the analysis of external environments and the adaptation of a firm's capabilities on the subject have been widely employed by strategic practitioners. However, increasing 'hypercompetition', caused by unpredictable technological transformations and the globalisation of business activities, signals that a firm is a static mechanism with its own culture and heritage which particularly have to be taken into account in an attempt to control, manipulate and, in the best scenario, shape the environment (McNamara et al. 2003; Cao 2011; Wilden et al. 2013). As a result, the focus has shifted to the firm's portfolio of resources and skills.

The second stage of theoretical progression towards developing a capability approach is linked directly to the current understanding of the term 'capability'. Thus, the second stage recognises the term 'capability' from an organisational theory perspective. Capability' represents certain practices that are embedded within organisational routines and managerial decision-making processes and involves unique, firm-specific usage of firm's resources in combination with firm's skills and competences (definition based on Leonard-Barton (1992), Day (1994), Winter (2003)). Capabilities have a set of characteristics (strengths and weaknesses of the firm, as stated in Penrose (1959)), the compositions of which depend on a theoretical underpinning of strategic analysis. More specifically, two perspectives have been underlined as part of the second (but really birth) stage of a capability approach: RBV, where capabilities are part of the firm's resource structure (De Brentani and Kleinschmidt 2015; Greene et al. 2015), and KBV, where capabilities act as "*an interrelated, interdependent knowledge system*" of an organisation (Leonard-Barton 1992, p. 114; Blome et al. 2014).

Resource-based organisations nowadays are discerned as having bundles of distinctive assets, competences and capabilities that enhance positions within the competitive arena as well as help to identify sources that might assist in the acquisition and generation of new assets/capabilities (Barney 1991; Day 1994; Eng 2008; Juga 1999; Wernerfelt 1984; Greene et al. 2015). Assets represent the tangible aspects of a company's resources, such as technologies and buildings, whereas capabilities are the invisible "*glue that brings assets together and enables them to be deployed advantageously*" (Day 1994, p. 38). Therefore, organisational capabilities demonstrate the value or benefits of assets that will be used strategically and developed within processes and routines. Researchers such as Day (1994), Song et al. (2008) and Ramaswami et al. (2009) have identified that as part of organisational capabilities, firms develop distinct capabilities for different practices, such as market-management capabilities, new product development and production capabilities, logistics capabilities (in order fulfilment) or service process capabilities (in service delivery).

From a KBV perspective, capabilities are systems of knowledge and skills used in applying knowledge and learning, in order to achieve a competitive advantage (Leonard-Barton 1992). The four-dimensional map with the following systems of knowledge generation, dissemination and implementation – (1) knowledge and skills (people knowledge), (2) technical system knowledge, (3) managerial systems and (4) the culture of a firm in terms of values and norms – aims at determining critical capabilities within each system and assessing how these can be deployed, in order to implement a strategic vision set by a firm (Day 1994; Leonard-Barton 1992). Moreover, Blome et al. (2014) reveal that internal and external knowledge sharing activities improve operational efficiency which then can lead to positive changes on a strategic level, i.e. product development.

Theoretical principles such as learning within knowledge creation and sharing, as well as the dynamism of environments, have driven businesses' concerns regarding establishing flexible business models that can easily adapt to unpredictable changes in external environments as well as prevent inertia within established organisational routines (Leonard-Barton 1992; Schreyögg and Kliesch-Eberl 2007; Teece 2007). Therefore, capabilities mapping intends to determine core capabilities that are hard to track (Leonard-Barton 1992; Schreyögg and Kliesch-Eberl 2007; Teece 2007).

The third group of studies also follows RBV and KBV principles, though capabilities are not static but dynamic and transformable in nature, which enables for the flexible operational transformation and adaptation of firms by possessing core competencies that differentiate them from their competitors (Wang and Ahmed 2007). The shift towards the dynamisation of organisational capabilities has become a core aspect for survival and the achievement of sustainable competitive advantage due trying to strike a continuous balance between the exploitation of internal and external firm-specific competences, as well as the exploration of new capabilities (Soosay and Hyland 2008; Teece 2007). Thus, pioneers of dynamic capabilities theory, Teece et al. (2007, p. 1319), define them as:

> *"Unique and difficult-to-replicate capabilities… which can be harnessed to continuously create, extend, upgrade, protect, and keep relevant the enterprise's unique asset base"*

Strategic management has moved towards a philosophy where effectively the organisation is able to control the environment and manage it in any circumstances, whether the result of technological changes or market demand uncertainty, to "*accomplish against the opposition of circumstance or competition*" (Teece et al. 1997, p. 513). According to the dynamic capabilities paradigm, introduced by Teece et al. (1997), Schumpeterian (1934) innovation-based competition transpire in reality, where by exercising the use and development of dynamic capabilities a firm can constantly renew existing skills or generate new competences, thereby resulting in 'creative destruction' or radical innovation.

The strategic direction of organisational behaviour is based on innovation – incremental or radical – and constructed in accordance with three business model categories: processes, positions and paths (Teece et al. 1997; Teece 2014; Helfat and Peteraf 2015). Paths demonstrate the end result and strategic aim of an organisation, such as technological transformation or entering or establishing new markets. Capabilities reside in processes and positions. However, the choice of which capability exactly needs to be developed is derived from a specific path selection (Teece et al. 1997; Teece 2014; Helfat and Peteraf 2015).

Finally, dynamic capabilities appeal to those seeking to resolve the problem of inertia in organisational operations due to the fact that routinisation, where "*learned skills become impediments*"[6], might limit further improvements (Levinthal and March 1993, p. 110). However, absorptive capacities that are part of dynamic capabilities can be complemented with dynamic specialisation in a particular situation (in other words adaptive capacity) (Hulsmann et al. 2008).

Nevertheless, not all capabilities are dynamic in nature, and they are often only responsible for transforming organisational elements when crises, unexpected events or external opportunities occur. Winter (2003) distinguishes between substantive and dynamic capabilities, the difference being that substantive capabilities aim at efficiency in operations and reside in daily routines and decision-making (ordinary capabilities in Winter's (2003) words), whereas dynamic capabilities are responsible for renewing substantive capabilities which in unexpected events or scenarios are hidden in routines or become obsolete (Zahra et al. 2006; Helfat and Peteraf 2015).

Overall, the capability approach has become a serious and critical academic issue based on understanding a number of complex processes behind the convergence and interaction of the resources, skills, competences and information which lead to the sustainability of a company's competitive position. However, the aim of this study lies in exploring empirically whether there is such thing as mobile technology capabilities as part of mobile technology deployment. The discussion around mobile technology (section 2.2) has already stressed that ubiquitous technology extends the technical functionality of fixed networks and stationary IT and also benefits users more, although a growing number of studies as well as practices illustrate the opposite case. Nevertheless, the existing literature has come up with a concept called 'IT capability' (Bhatt and Grover 2005). Thus, in order to progress with an empirical investigation into mobile technology capabilities, an understanding of IT capabilities through grounded theory's theoretical sensitivity is required, which in turn will enable empirical data collection and analysis.

[6] This issue is known as the 'myopia of learning', where learning capabilities might be used through inertia and result in the need to unlearn due to the irrelevance of any new information (Levinthal and March 1993).

2.2.6. Information technology capabilities: the current state of research

Technological developments and heavy investment in IT have gone far beyond high-tech manufacturing businesses. In the era of e-commerce, IT appears to be an enabling mechanism for conducting business and delivering services in a more efficient and effective manner (Mitra 2005). The importance of acquiring and developing IT capabilities in order to effectively deploy IT resources and deliver superior value to customers appears to be a critical issue for both manufacturing and service players (Miles 2001). It is therefore not surprising that researchers such as Ross et al. (1996), Bhatt and Grover (2005), Tarafdar and Gordon (2005), Lester and Tran (2008), Huang and Chen (2009) and Ong and Chen (2014) have turned their attention to the role and composition of IT capabilities within organisational processes.

Resource-based View on IT Capabilities

RBV represents the theoretical underpinning of a conceptualisation of IT or technological capabilities in a substantial number of scholarly works (Ross et al. 1997; Zhang and Tansuhaj 2007; Zhang et al. 2010), with some key contributors in this research field being Bharadwaj and Sambamurthy (Bendoly et al. 2012; Bharadwaj et al. 2013; Bharadwaj 2000; Overby et al. 2006; Sambamurthy et al. 2003).

To define simply what constitutes IT capabilities, Tarafdar and Gordon (2005) derived a broad conceptualisation:

> *"IT capability describes different aspects of an organisation's base of IT resources." (Tarafdar and Gordon 2005, p. 2).*

Nevertheless, this broad perspective is not the only view on IT capabilities. In fact, two distinct approaches have been identified within existing research to define and conceptualise IT capabilities. The majority of information research scholars (Bharadwaj 2000; Sambamurthy et al. 2003; Bhatt and Grover 2005; Tarafdar and Gordon 2005; Chen and Tsou 2007; Zhang and Tansuhaj 2007; Huang and Chen 2009; Bendoly et al. 2012; Ong and Chen 2013; Chae et al. 2014) define IT capabilities as the composition of IT systems consisting of tangible and intangible assets and competences which can be analysed on three interdependent levels: the resource level (IT infrastructure), the organising level (IT personnel, governance and co-ordination mechanisms) and the enterprise level. Enterprise-level analysis, undertaken by Huang et al. (2009), demonstrates the value perspective on IT competences, or on capabilities with a

strategic orientation of the organisation and leadership being responsible for utilising IT infrastructure and other resources such as skills, knowledge and competences. As a result, the technical aspect of any particular class of IT is not of any interest for strategic decision-making – the key focus lies in the strategic mindset of the organisation in pursuing innovation and aiming at deploying the technology to benefit the firm and its clients alike.

Conversely, the second group of information research scholars (Benitez-Amado and Walczuch 2012; Wade and Hulland 2004; Wang et al. 2012; Chen et al. 2015) defines IT capabilities as "*a firm's ability to mobilise and deploy IT resources effectively to perform*" (Wang et al. 2012, p. 329). Hence, IT capabilities represent certain organisational practices or activities, such as strategic IT planning, information system development, leveraging and using an information system and lastly managing an IT function and its assets. Wang et al. (2012) particularly emphasise that IT capability is a firm's commitment and responsibility towards combining IT resources uniquely. This uniqueness then results in the creation of rare, firm-specific resources. What is interesting is that there is an overlap with the dynamic capabilities approach (Teece et al. 1997), whereby IT capability through the combination of IT resources enables firms to remain flexible and proactive in responding to environmental instabilities.

Despite the fact that Zhang (Zhang and Tansuhaj 2007; Zhang et al. 2010) operationalise IT capability as a bundle of resources, it is acknowledged that IT resources are assets that firms invest in externally or internally (Ross et al. 1997), while IT capabilities are system-based, meaning that in addition to resources there has to be an element that enables firms to deploy IT advantageously. This element involves learning embedded within an organisation's culture (Zhang and Tansuhaj 2007). Andreu and Ciborra (1996) proposed the same idea 11 years earlier.

Having explained differences in conceptualising IT capabilities using RBV, albeit from a slightly dynamic capabilities perspective, it is worthwhile emphasising that not all studies exploring and explaining IT capabilities study IT capabilities in isolation; rather, they look at its relationship with other organisational elements. The area most researched is organisational performance (Bharadwaj 2000; Bhatt and Grover 2005; Benitez-Amado and Walczuch 2012; Ong and Chen 2013; Powell and Dent-Micallef 1997; Zhang and Tansuhaj 2007). All of these listed studies conclude on a positive and significant relationship between IT capability and firm performance. Interestingly,

however, a recent study by Ong and Chen (2013), using cross-sectional data, found that IT actually results in positive financial and non-financial outcomes (firm performance). However, the strength of this impact is much weaker than the relationship between IT capability and firm value, which constitute opportunities for growth either through innovation or the expansion of resources or skills. Therefore, IT capability represents a strategic type of capability, along with IT resources being of strategic value. The information systems and IT research field stresses explicitly that mapping and identifying resources and capabilities helps a firm to perform self-analysis and to move forward, where necessary.

Furthermore, in catching up with developments and the popularity of e-commerce, Zhu (2004) developed a technological capabilities construct that attempted to capture the importance of IT for companies operating in an e-commerce context, namely the 'construct of e-commerce capabilities'. The focus lies on the functionality of the Internet, where the firm's IT infrastructure is independent of the e-commerce capabilities concept. The theoretical basis used to determine e-commerce capabilities dimensions is grounded in the analysis of business value chain activities and the identification of benefits derived through the exploitation and application of the Internet for each category. Zhu (2004) justifies the necessity to develop a measurement tool for e-commerce capabilities by emphasising the need to assess of e-commerce value as a part of overall business performance or, perhaps, in order for bricks-and-mortar organisations to make decisions regarding conducting e-business activities.

Studies on both IT and e-commerce capabilities underline that apart from being an operational tool for automating information exchange and efficiency in communication, technological capabilities and resources are significant on a strategic level. M-commerce, a new and evolutionary stage in technological advancements, offers new business opportunities for effectively anticipating and responding quickly to market needs as well as survival in highly competitive and uncertain environments (Rochford 2001). Therefore, new concepts need to be developed so that firms can make strategic choices regarding operating in a new 'mobile' environment.

Finally, number of studies on IT capabilities demonstrates that SMEs tend to deploy IT to a larger extent than large companies as IT is considered to be a minimum risk investment with a maximum result (Jones et al. 2014b; Whyman and Petruscu 2014). According to Jones et al. (2014b) SMEs are "*characterised by high business failure*

rates within the UK". IT and technological advancements are seen as instruments which can lower the failure rate (Jones et al. 2014b). Conceptually mobile technology should be seen as a more attractive resource in comparison to fixed networks and stationary desktop technology, because of the lower costs involved. However, to the author's knowledge no existing published work proves or disproves such assumption.

2.4. Mobile Technology Deployment: Gaps in the Literature

Mobile technology is a new phenomenon for the research community; however, one trend in the business world – technological transformation – is old. The previous sections have outlined the benefits and challenges of mobile technology and justified the necessity for a comprehensive exploration of its deployment in business settings, with the key aim of conceptualising mobile technology capabilities. Based on capability approach theory and existing studies on IT capability, if they exist, mobile technology capabilities can help a firm to deploy mobile technology on both strategic and operational levels.

As discussed previously, no studies have looked holistically at the deployment of mobile technology as a process and instead cover individual elements of mobile working or process efficiency (Hameed 2003; Liu et al. 2007). A vast amount of research on mobile technology deployment and its adoption is centred on the consumer side, while within business circles the impact on the effective management of human resources and cost efficiency in operational processes are the only issues discovered thus far. As a result, a deeper understanding of mobile technology deployment in business settings is imperative. Moreover, Jones et al. (2014b) concludes that research around the adoption of fixed networks and stationary desktop IT by micro-businesses is limited. It is even more trues in relation to adoption and deployment of mobile technology: there is a lack of studies in the SMEs context, which are likely to take advantage of mobile technology. Therefore, the following research objective needs to be addressed through empirical research:

1. *To discover how creative service SMEs deploy mobile technology.*

'IT capability' represents *"a firm's ability to mobilise and deploy IT resources effectively"* and uniquely (Wang et al. 2012, p. 329). The author defines the term 'mobilise IT resources' as organisation of IT resources; whereas the term 'deploy IT resources' in the Wang et al. (2012)' definition of IT capability means use of IT

resources. For the purpose of this study, the term ‘deploy’ defines mobilization or orchestration and the use of certain resources. Because, the use of resources mostly implies application and exploitation of firm’s resources, The term ‘deployment’ integrates the use and the mobilization.

Studies on examining mobile technology deployment are limited. However, to identify mobile technology capabilities, the researcher need to understand the process of mobile technology deployment. To the author’s knowledge, no previously published research has introduced the concept of mobile technology capabilities. Hence, following up the first research objective, the author set the second research objective of this study:

2. *To conceptualise mobile technology capabilities;*

2.5. Chapter Summary

This chapter has briefly outlined findings from existing research concerning mobile technology. As a result, section 2.4 lists two research objectives to be addressed in this thesis. Moreover, a capability approach has been selected as the underlying theoretical framework to study mobile technology deployment in business settings. The next chapter continues with a critical review of the literature but focuses particularly on service innovation.

Chapter 3. Literature Review II: Innovation in Services

3.1. Overview of the Chapter

This chapter reviews existing scholarly work around service innovation (SI). Once again, the purpose of the literature review is similar to Chapter 2, in that it broadens rather than narrows knowledge around the phenomenon. As a result, the researcher outlines theoretical insights known about SI so far. Firstly, the overall landscape of SI studies is discussed critically against a breakdown of theoretical streams. Then, currently proposed definitions relating to the term 'service innovation' are compared and contrasted. The researcher, however, does not end the discussion with her own clear definition of the term. Ultimately, this thesis uses the grounded theory method with the purpose of empirically defining the SI term and comparing it to the existing literature. Such a comparison and final definition are provided in Chapter 8, which discusses the findings of this thesis. The second section focuses on studies that explore or explain the role of ICT in service innovation. The complexity of SI requires a particular conceptualisation; hence, one of the sections discusses and justifies the chosen conceptualisation in this study. A summary of the chapter completes this part of the thesis.

3.2. The Nature of Innovation in Services

The prevailing role of service economies, and the emerging notion of service-dominant logic (SDL), has shifted practitioner and academics' attention towards the processes rather than the outcomes of organisational activities (Jana 2007; O'Cass et al. 2013; Vargo and Lusch 2008; Lusch and Nambisan 2015). Customer experience and the ongoing satisfaction of their needs have become a reference point for balancing the implementation of continuous innovation and operational efficiency within any business (Manu and Sriram 1996; Soosay and Hyland 2008). Hence, competition is seen as a critical issue within the service sector, particularly as firms are struggling in an attempt to produce legally protected, unique solutions to sustain their competitive position. Legal protection and the recognition of unique solutions in the context of the ad hoc nature of simultaneous production and consumption hinder service firms from tracking their own innovative outcomes. Nevertheless, from the practitioner's point of view, the wide deployment of ICT in the context of services enables firms to maximise the visibility of innovative activities and achieve competitive advantage (Bygstad and Aanby 2010; Metcalfe and Miles 1997). Bygstad and Aanby (2010) conclude in their

empirical case study research that ICT integrates components within the service production system and allows the tracking of collaborative processes as well as communication with clients. Thus, ICT represents a tool for recording routinised or ad hoc practices when producing and delivering services. Recent Barrett et al' (2015) study reemphasise this conclusion.

Despite the fact that innovation in services remains a challenging issue within management practice as well as the academic world, by causing a debate around the nature of the service innovation term, research is progressing on an ongoing basis in an attempt to uncover managerial issues related to the intangible aspects of processes as well as experiences (Giannopoulou et al. 2014; Howells and Tether 2004; Miles 2001; Salunke et al. 2013). Moreover, these attempts shed fresh light on innovation theory in general.

3.2.1. Theoretical perspectives on service innovation

The existence of three major schools of thought within SI research hinders the composition of a holistic depiction of innovation processes in service firms. In order to find the most robust definition of service innovation, it is essential to explore and comprehend fundamental assumptions that derive from each philosophical stream. Some scholars (Droege et al. 2009; Tether 2005, p. 6) propose the four-group segmentation of theoretical perspectives:

- In the *neglect approach*, innovation has a "*Cinderella status*" in services by being completely ignored.
- The *assimilation stream* (Droege et al. 2009) has adopted the technologist perspective. The basic notion underpinning both perspectives lies within the general theory of innovation. Therefore, the researcher treats technologist studies under the assimilation stream, which analyses innovation in services according to the postulates of new product development (NPD).
- *Demarcation studies* emphasise the unique nature of services.
- Finally, the *integrated perspective* intends to reconceptualise the general theory of innovation, by taking into account both goods and services as units of analysis.

This study will critically assess the last three theoretical directions (Table 2, a full version of the table can be found in Appendix A), due to the fact that currently there are

no doubts among the research community about the abilities of service firms to innovate.

Stream I: Classical Innovation Theory Perspective

Assimilationists discern innovation in services through the spectrum of NPD concepts originating in manufacturing. Technology represents the main driving factor behind new value creation in the manufacturing sector and is the proxy indicator used for the evaluation of innovation success (Droege et al. 2009; Miles 2001; Rogers 2003; Jones et al. 2014b; Higon 2013). As a result, in 1997, CIS II (the second European Innovation Survey) used the manufacturing sector's innovation measurement principles within the service industries, mainly in order to evaluate the portfolio of research and development (R&D) activities as well as investments in IT (Droege et al. 2009).

The first section of Table 2 (Appendix A) lists a number of studies (Easingwood 1986; Evangelista 2000; Miozzo and Soete 2001; Sundbo 1997) that have applied classical innovation principles to the service sector. Assimilation scholars revealed that although service firms participate in the adoption stage of new technologies and can hardly be treated as innovators themselves, there is a space for incremental and radical changes within organisational processes and technology deployment, which enables service providers to innovate in their own right (Miles 2001).

The first steps in the investigation of innovation across industries and services were initiated by Pavitt's (1984) work on the sectoral classification of innovation activities based on the technological trajectory of each industry. This typology became a fundamental basis for other studies directed at codification of innovation. Concerning innovation in services, Pavitt (1984) initially classified service industries as supplier-oriented, whereby service firms appear only at a stage of adopting innovation derived from the manufacturing sector.

Table 2. Studies on Service Innovation

Author(s)	Research Focus	Industry	Type of Study	Main Conclusions
Stream I: Assimilation Approach				
Pavitt (1984), Pavitt et al. (1989)	Codification of innovation activities across firms and sectors.	(1) Agriculture, housing, private services, traditional manufacture; (2) assembly manufacture, bulk materials; (3) machinery, instruments; (4) electronics, chemicals; (5) finance, retailing, publishing.	Sector level SPRU Innovation survey Quantitative and qualitative analysis	Development of the industrial taxonomy of the innovation based on technological trajectories: (1) supplier-dominated, (2) scale-intensive, (3) specialised suppliers, (4) science-based, (5) information-intensive (a new pattern for the some service activities, such as finance, retailing and publishing).
Barras (1986)	IT-based innovations in services. The analysis of the transmission trajectory by which the adoption of the new technology is characterized within the user industries.	User industries within the service and consumer goods industries.	Conceptual	The innovation process trajectory through the "*Reverse product cycle*" (RPC): improvements in the efficiency of delivering existing services lead to quality improvements, eventually yielding to product innovations through the generation of new types of services.
Easingwood (1986)	Investigation of the new product development (NPD) practices in service organisations and exploration of the service differences reflection on new service development management.	Financial (insurance and banking); hospitality (hotels, motels, catering, and tour operators); communications; transportation; retailing.	Qualitative and quantitative analysis	Service characteristics have implications for NPD (most crucial aspects are simultaneity and intangibility). A service is an "*inextricably part of a network structure*"; therefore, test market is playing unimportant role within new service development (NSD) (p. 274). Work load capacity of operations can be reduced through the use of technologies.
Soete and Miozzo (1989, 2001)	Revision of the Pavitt's taxonomy and design of the alternative taxonomy of services that captures a close interaction nature between	(1) Personal services (restaurants, laundry, beauty); public and social (health, education); (2) transportation, wholesale, finance/insurance,	Qualitative induction/deduction	Service taxonomy based on technological linkages with manufacturing firms has been built in order to address the changing nature within the service sector: a technological transformation and an intensified

Table 2. Studies on Service Innovation

Author(s)	Research Focus	Industry	Type of Study	Main Conclusions
	services and manufacturers.	communication; (3) specialist business services, software.		internationalisation: (1) supplier dominated; (2) scale-intensive physical networks and information networks; (3) specialised suppliers and science-based.
Sundbo (1994,1997)	Exploration of the organisation aspect of the innovation process in the service sector.	Financial service (banks and insurance, payment-transmission companies, investment advisory services); management consultancy; tourism services; catering.	Multiple case study	Innovation and organisational learning are two separate theoretical doctrines. Strategic innovation theory is the most appropriate for the defining nature of innovation in the service sector. However, the entrepreneur and the technology-economic innovation theories have to be also taking into account. Four types of service innovation organisations have been identified: (1) top strategic organisations; (2) network firms; (3) professional firms; (4) classic entrepreneurship.
Evangelista (2000)	Evaluate major similarities/differences of service innovations with innovations in manufacturing. Determine patterns of service innovations. Give a brief overview of firms' innovation strategies and performance in service sector.	(1) Transportation, security, cleaning, travel services, retail, and legal services; (2) advertising, finance (banks and insurance), hotels and restaurants; (3) Computer and software services, R&D services; (4) integration of R&D and design services.	Sector level Italian Innovation Survey (ISTAT, 1997) (based on OECD "*Oslo Manual*") Factor analysis and clustering	Following taxonomy has been proposed: (1) technology users; (2) interactive and IT based services; (3) science and technology-based services; (4) technical consultancy services. Services and manufacturing sectors have more similarities in the process and patterns of innovating.
Higon (2013)	Evaluate the impact of ICT adoption on innovation outcomes in service SMEs	(1) R&D and design	Survey	Results indicate that adoption of ICT leads to flexibility which enables creative thinking.
Jones et al. (2014b)	Adoption of ICT – strategic responses	(1) Transport; (2) Retail	A longitudinal case study	External factors (relationships, technical infrastructure) and internal factors (resources

Table 2. Studies on Service Innovation

Author(s)	Research Focus	Industry	Type of Study	Main Conclusions
				i.e. skills, IT infrastructure, business model) represent main influences that lead to adoption of IT and incremental changes within the service processes.
Stream II: Demarcation Perspective				
Gadrey and Gallouj (1998)	Analysis of the relationships between provider and customers in professional and business services context.	Business and professional services (consultancy firms).	Conceptual	The 'moment of truth' and 'moment of thrust' are two interrelated stages within the analysis of the customer service firm interaction that is essential in innovation development process.
Sundbo and Gallouj (1998, 2000)	Assessment of the innovation processes in service sector.	(1) Telecommunication; large-scale processing, building maintenance; software companies; 2) consultancy and engineering; (3) business consultancy services; (4) IT, repairing services; (5) cleaning, security, hotels and restaurants; (6) financial and tourism services.	SI4S (Innovation in services and services in innovation) Survey	The following classification of the service innovation patterns have been developed that counts particular innovations within service firms: (1) classic R&D (or technological) pattern; (2) service professional pattern; (3) organised strategic innovation; (4) entrepreneurial patterns; (5) artisanal innovation; (6) network pattern of the service innovation.
Den Hertog (2000)	Construction of the service innovation framework; mapping the NSD patterns; evaluation of the role played by KIBS in the service innovation system.	-	Conceptual	The four-dimensional model of service innovation has been proposed: technological options and three, most significant non-technological factors (new service concept, client interface, and service delivery system. The service system is a result of the interactive relationships between the various dimensions. Moreover, five innovation patterns have been determined: (1) supplier-

Table 2. Studies on Service Innovation

Author(s)	Research Focus	Industry	Type of Study	Main Conclusions
				dominated innovations; (2) innovation in services; (3) client-led innovation; (4) innovation through service; and (5) paradigmatic innovations. Finally, service innovation in KIBS has been analysed through the prism of the knowledge creation model.
Dejellal and Gallouj (2001)	Attempt to conduct a survey that takes into consideration non-technological innovations (service innovations).	Financial services; consultancy; operational services; hotel, catering, and retailing.	SI4S (Innovation in services and services in innovation) Survey	Three hypotheses have been confirmed: (1) the interaction process between client and service company plays a crucial role in the service innovation process; (2) interactive models of innovation process are predominant in the service sector in comparison with the linear models of the NPD; (3) there is an increased demand in protection solutions for the service innovations.
Sundbo et al. (2007)	Exploration of the innovative behaviour and innovation system in tourism industry: identification and evaluation of the innovativeness' determinants.	Tourism services (accommodation, travel agencies, transportation, restaurants and others).	Quantitative and qualitative	Tourism firms' innovativeness depends upon the size of the company – the larger the firm, the more innovative behaviour it pursues. Entrepreneurship has a specific value in tourism sector in boosting the innovation. It is particularly positively correlated with networking. The value of network has been recognised prior to the success of the service innovation in the tourism sector, overall. Determinant of the innovativeness are interrelated: "*larger size or entrepreneurship, professionalism of varying types, networks*

Table 2. Studies on Service Innovation

Author(s)	Research Focus	Industry	Type of Study	Main Conclusions
				and favourable innovation systems" (pp. 103-104).
Stream III: Synthesis				
De Brentani (1989)	Identification of the factors which lead to the failure and/or success of firms operating in industrial services sector.	Financial (banking and trust, insurance); management services (computer and system, marketing and advertising, management consultant, accounting); transportation and communication (shipping and transportation, communication); and other sectors.	Quantitative Comparative study	NPD literature is an initial source for the measurement in NSD. Success factors that are shared with NPD are market orientation, a formality of the service development process, importance of radical degree of innovativeness within new service offering, and project synergy. However, it is crucial to take into consideration service-specific attributes: importance of customer judgment of service quality and other characteristics which might lead to competitive advantage via differentiation or cost reduction strategies.
Gallouj and Weinstain (1997)	An attempt to establish new theoretical stream in service innovation (and general innovation) research through the re-conceptualisation of the product/service based on Lancaster's (1966) characteristic-based approach.	-	Conceptual	Lancasterian approach is found to be a sufficient theoretical foundation for the integrative innovation approach that can involve both, services and products. The following innovation modes have been proposed: radical innovation, improvement innovation, incremental innovation, ad hoc innovation, recombinative and formalisation innovations. Moreover, four innovation dimensions (service outcome characteristics, service provider competencies, service provider technology and client competencies)

Table 2. Studies on Service Innovation

Author(s)	Research Focus	Industry	Type of Study	Main Conclusions
				form innovation vectors.
Drejer (2004)	Investigation into whether Schumpeter's innovation concept can be a platform that integrated the nature of service innovations and NPD in manufacturing within a single framework.	-	Conceptual	Synthesis approach for innovation studying has been underlined. Service-specific characteristics such as involvement of multiple actors, the codification of knowledge in the process of innovation replication, and the significance of the organisational innovation are also applied to the manufacturing.
Oke (2007)	Determine the types of innovation in service sector, UK. Examine the relationships between the degree of innovativeness, NSD & NPD-related practices and the overall performance of the service firms.	Financial and insurance services.	Qualitative interviews and quantitative (survey)	Both, product and service innovations, are examined. Incremental type of innovation is the most predominant among UK service firms. Existing formalisation of the NSD is more associated with radical degree of innovativeness; therefore, there is a need to identify similar approaches for pursuing me-too innovations. Service innovations are found to be prevailing over the product innovations among service companies.
Paswan et al. (2009)	Development of the service innovation typology.	-	Conceptual (purely based on the convergence analysis of the critical review of academic research and real benchmark examples).	A multidimensional blueprint, which determines the service innovation strategy and help to service firms to identify the typology (an eight-cell typology).
Barrett et al. (2015)	Service innovation is the integrative role of digital technology	-	Conceptual	A summary of cross-discipline studies exploring the relationships between the adoption of digital technology and service innovation.

Table 2. Studies on Service Innovation

Author(s)	Research Focus	Industry	Type of Study	Main Conclusions
Lusch and Nambisa (2015)	A service-dominant logic focus on service innovation		Conceptual	Conceptualisation of service innovation using the service-dominant logic that transcends the tangible-intangible and producer-consumer divides.

However, a specific pattern of service firms within the finance, publishing and retailing spheres, known as 'information intensive', has subsequently emerged (Vence and Trigo 2009). The crucial role of ICT in the delivery of services signifies possibilities for innovating within organisational and administrative processes, known as 'process innovation' (Miles 2001).

Facilitating the role of technologies in services was a core underpinning of Barras' (1986) research. The technological perspective on SI evolved into a more focused view on service sector within Barras' (1986) framework, in which the process of NSD behaves conversely (reverse product cycle (RPC) model) to new product creation in manufacturing firms. Barras (1986) discerns technologies as a major stimulus of innovation in services evolving in conformity with the following three phases (Figure 5):

1. Technology application for the purpose of improving efficiency in the delivery of existing services.
2. Technology application for service quality improvement.
3. Technology application in new service development (NSD).

Figure 5. Reverse Cycle Model of Innovation

Phase of the cycle	Main forms of innovation	Competitive effort	Enabling technologies	Examples	Impact of technical advances on production factors
Phase I	Incremental process innovation	Improvement of service efficiency (cost decrease)	Mainframe	The computerisation of insurance policy records, personnel	Labour-saving technical advances which increase the amount of capital used
Phase II	Radical process innovation	Improvement of service quality	Mini and micro computers	The computerised management of housing waiting lists in local public administration, on-line insurance policy quotations, ATMs	Technical advances which are neutral in terms of labour, and which encourage an increase in the quantity and particularly the quality and variety of capital
Phase III	Product innovation	New services	Networks	Home banking	Technical advances which save capital whilst improving its quality

Source: Gallouj, F. (1998). Innovating in reverse: services and reverse product cycle. *European Journal of Innovation Management*, 1 (3), p. 125.

As a result, technological competences, skills and knowledge bases used in deploying technology are considered a priority within the resource portfolio of service firms. IT service firms, such as software consultancies and telecommunication specialists, appear to be ideas-sourcing players in the whole production chain of manufacturing. However, the standardisation of most IT left little room for creativity in vast services (Tether 2005). Nevertheless, in their latest publication, Giannopoulou et al. (2014) conclude that creativity is a key driver of innovation in service firms.

Despite the fact that technology plays a crucial part in the development of the service sector, especially considering the growth of "*self-service*" businesses within service production, Barras' (1986) view has been widely criticised for the "*one-size-fits-all assumption*," where technology is the only indicator for innovation measurement (Miles 2001; Hipp and Grupp 2005; Howells 2006). Thus, the peculiarities and diversity of service activities have not been taken into account by assimilationists (Miles 2001; Hipp and Grupp 2005; Howells 2006).

Nevertheless, a number of academics (Easingwood 1986; Edgett and Snow 1996; Scheuing and Johnson 1989) have moved far beyond classification issues and have attempted to analyse SI production through the prism of NPD postulates and models. As a result, the whole process of new NSD is recognised as a system or chain of stages starting with idea generation and then ending with an implementation phase (Scheuing and Johnson 1989). The marketing function is highlighted as being responsible for NSD projects being completed by stressing the importance of 'softer' measures such as relationship management and service quality achievement (Edgett 1994; Edgett and Snow 1996). NPD studies in the service sector (Edgett 1994; Scheuing and Johnson 1989) appear to have been pioneering in an effort to research SI through the marketing perspective (Appendix B).

In 1997, Sundbo concluded that strategic innovation theory is the most appropriate for determining the nature of SI. However, "*there is a difficulty in achieving sustainable competitive advantage using product strategy*" in service firms (Oke 2007, p. 565). The distinctive essence of services has to be taken into account. Despite the fact that Scheuing and Johnson (1989), Evangelista (2000) and Sundbo (1997) underlined the significance for service firms of 'human' factors such as customers and interaction with other network players, these elements have been integrated into the NPD theoretical framework without considering the unique elements of production and delivery. As a

result, a new school of thought has emerged in an attempt to explore the heterogeneous nature of services.

Stream II: Distinctive Approach

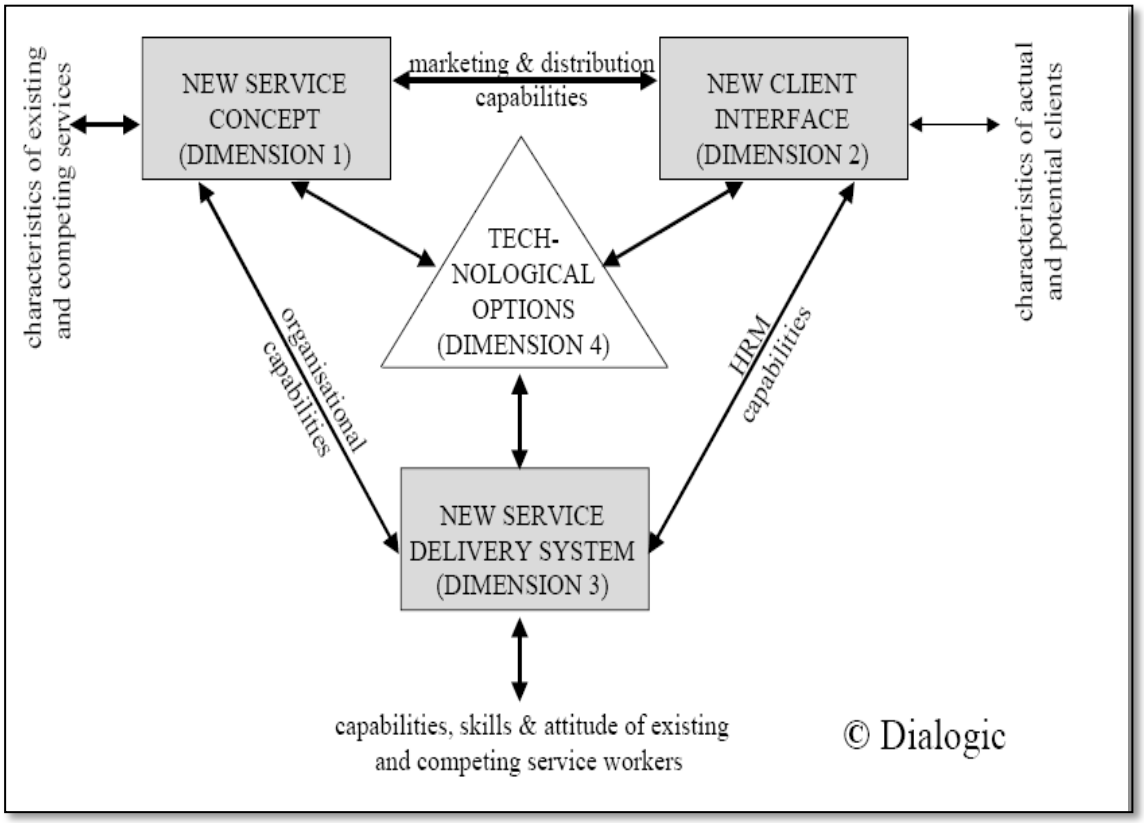
The *demarcation* stream of SI research focuses on distinctive IHIP (intangibility, heterogeneity, inseparability and perishability) features and is characterised by an extensive interest in knowledge economy, specifically knowledge-intensive business services, as shown in Table 2 (see above) (Den Hertog 2000; Hipp and Grupp 2005; Miles 2000). Demarcation advocates accentuate the need to design new theories, indicators and instruments to measure innovation in the service context. As Flikkema et al. (2007) state, the understanding of non-technological aspects of service production and delivery lies in the analysis of the unique nature of service.

Firstly, services are distinguished due to the intangibility of actual outcomes as opposed to goods. According to Hoffman and Bateson (2001, p. 27), intangibility is "*the mother of all unique differences*" in respect to service products. Even if in some cases a service tends to deliver tangible products such as music or movie files, these tangible clues are part of the bigger bundle of activities behind service processes. The physical form of goods as an actual innovation artefact is not always the case for service firms, where invisible solutions hinder the possibility of actually recognising innovation (Tether 2005). The intangible nature of services brings into question how the commercialisation phase of inventive ideas takes place through the reproduction and penetration of a new service concept into organisational routines (Hoffman and Bateson 2001; Howells and Tether 2004). Consequently, commercialisation requires different innovation protection efforts, especially where service outcomes are not patentable and recognising as well as defending the innovation outcome is a difficult task (Hoffman and Bateson 2001; Howells and Tether 2004).

As a result, a recombination framework, based on Schumpeter's economy of innovation theory, forms a theoretical basis for demarcation researchers, such as Gadrey et al. (1995), Gadrey and Gallouj (1998) and Den Hertog (2000). Den Hertog (2004) proposed a four-dimensional model (Figure 6) that has been widely mentioned in the SI management literature. Based on this model, technological competence is seen as part of the interaction system where relationships with customers, the new service concept (ideas behind market analysis and creative thinking) and the delivery channel constitute

a platform for a variety of modifications, in order to produce ad hoc and unique solutions to customers' problems (Den Hertog 2000).

Figure 6. A four-dimensional model of service innovation



Source: Den Hertog, 2000. Knowledge-intensive business services as co-producers of innovation. *International Journal of Innovation Management*, 4, p. 495.

The interactive essence of service processes, particularly, derives from the inseparability (or simultaneity) of service production and delivery (Hoffman and Bateson 2001). Gadrey and Gallouj (1998) specifically chose the customer service-firm interface as a unit of analysis, due to the fact that the market in the service industry appears to be a direct participant in new value creation. On the contrary, in manufacturing, market intelligence in terms of a firm's market orientation represents a basic but only initial ingredient in creating prototypes (Gatignon and Xuereb 1997).

The flexibility of the development process and the significance of the client as a core participant in the NSD explains the predominance of interactive SI models in comparison to the linear approach in NPD (Djellal and Gallouj 2001). Customer orientation is considered not only a behavioural aspect but also an operational weapon

for service providers. In spite of difficulties predicting satisfaction rates in services, there are possibilities to control a critical incident[7] and be able to improvise, in order to deliver unique radical or incremental solutions for a specific customer (Alam 2006; Droege et al. 2009). It is obvious that modern technological solutions such as e-commerce and m-commerce tools demonstrate opportunities for the minimisation of SI intricacies in terms of simultaneous responses to customer requirements and the ability to communicate directly (Berry et al. 2006). Hence, if managed effectively, inseparability and intangibility result in an increasing rate of customer satisfaction along with service quality.

Another characteristic which hinders the ability to monitor service quality is the heterogeneity of services. Customisation represents a particular aspect within service encounter, where standardisation is barely achievable (Gadrey and Gallouj 1998). However, recognition of the innovation phenomenon and its reproduction in future problem-solving activities depends mainly on calibrating service production (Tether 2005). Thus, the demarcation stream's hyper focus on the non-technological aspects of the NSD has overshadowed the significance of 'hard' technologies for successful SI (Tether 2005). Moreover, the deployment of IT helps to mitigate the effect of the last major distinctive aspect of services – perishability (Miles 2000).

Nevertheless, according to Vence and Trigo (2009), demarcation researchers stress the value of service peculiarities, albeit with the intention of reconceptualising classical linear innovation theory by providing insights that are useful for manufacturing firms as well. Consider the illustration of an automobile industry where vehicle manufacturers, originally involved in hard-core production, attempt to get involved with an after-sales service provision. As a result, networking with all players in the automotive value chain turns out to be particularly important.

Moreover, the literature search shows that a number of recent publications, which adopt the demarcation stream, is quite low. To the author's observation and research, no studies under the demarcation stream were published since 2007. The new stream of SI converges the idiosyncrasies of services with the principles of technological

[7] Critical incident – "*a specific interaction between a customer and a service provider*" (Hoffman and Bateson 2001, p. 31).

perspectives, in what is known as the 'neo-Schumpeterian approach'. This third stream is adopted by almost all recent publications on SI.

Stream III: Synthesis Research

The *synthesising* approach integrates classical concepts within studies on NPD in the manufacturing sector (where technologies are a core element) and the unique characteristics of services (Drejer 2004; Droege et al. 2009; Barrett et al. 2015; Lusch and Nambisa 2015). The synthesis perspective aims at developing an integrative framework. However, such a perspective is not novel to the academic world. In 1934, Schumpeter introduced the concept which covers five areas of innovation activities in manufacturing as well as service firms:

- Product innovation (the introduction of a new product or a new quality measure)
- Process innovation (the introduction of new production methods, including commercial realisation)
- Market innovation (the introduction of a new market)
- Input innovation (the introduction of a "*new source of supply of raw material or intermediate input*" (Drejer 2004, p. 556))
- Organisational innovation (the introduction of a new type of organisation).

Most significantly, Schumpeter (1976) highlights that in order to produce innovation there is no necessity to concentrate incessantly on the development of breakthrough discontinuous products/services. A "*process of industrial mutations*" is the means of continuous sustainability within a competitive landscape through imitation and the implementation of entrepreneurial creativity, and then integrating it into the overall organisational knowledge base (Schumpeter 1976, p. 83). Comprehending antecedent behaviour, which drives the implementation and introduction of new value, became a central issue among scholars following the Schumpeter's work (Drejer 2004). Considering SI analysis, Drejer (2004) and Flikkema et al. (2007) used the so-called neo-Schumpeterian approach and concluded that the diversified network of actors, where the integration and codification of knowledge take place on a continuous basis, has been conceptualised to be important in both the services and manufacturing contexts.

Schumpeter's (1976) viewpoint applies a purely theoretical notion to innovation, thereby supporting economic concepts in mainstream studies that see innovation as only

technology-driven. However, the third theoretical perspective extensively drives the possibilities to investigate SI from an operational point of view through the convergence of NPD stage models with specific services features that have led to the emergence of the following two concepts in NSD: modelling and blueprinting (Shostack 1982, 1984). As a result, the NSD process is a subject involving detailed planning which eliminates inefficiencies within the new value creation chain. Shoctack's (1982, 1984) models are currently widely used in research and managerial practice. Flexibility and the stage-gate concept as part of Shostack's models enable simplicity in the design and implementation of new services, and most significantly they drive opportunities to produce radical innovation outcomes (Oke 2007).

Meanwhile, another pioneer of the synthesis stream – De Brentani (1989) – conducted a survey across a variety of service industries, in order to determine success components within NSD. From the manufacturing-related side, market orientation and formal development procedures in terms of project-oriented processes have been found to be equally important to the service context (De Brentani 1989). On the other hand, the strategic orientation of innovative enterprise needs to be framed around a core element of NSD – the consumer – where customer involvement in the development and implementation process has to be based far more beyond market analysis (De Brentani 1989). Therefore, the fact that manufacturers and services both innovate within the same range of modes is not surprising (Tether 2005).

Moreover, and not new to academia, the service orientation concept aims to capture customer-employee interaction with a clear focus on employee expertise (competences) in terms of skills, knowledge, communication and support systems (Hogan et al. 1984). However, a completely 'fresh' view on the role of the customer within company operations is introduced, according to which, in addition to an internal portfolio of resources and capabilities, service orientation needs to consider external resources derived from customers (Alam 2006).

A deeper and more structural perspective within the synthesis stream was proposed by Gallouj and Weinstein (1997) who, following Sundbo's (1994) work, conceptualised NSD through the lens of modulisation. Lancaster's (1966) notion on the conceptualisation of the product as a set of characteristics found a new application within services, where innovation can be achieved through recombining, adding to and restructuring the NSD system (Gallouj and Weinstein 1997). This process of

transformation is called the 'formalisation process', which can follow either a technological (so-called 'natural') or a modulisation path (Gallouj and Weinstein 1997; Toivonen and Tuominen 2009). This point of view is consistent with Den Hertog's (2000) four-dimensional framework. However, Gallouj and Weinstein's (1997) vector approach embeds the dynamic features within NSD conceptualisation that drove the emergence of linkages between resources and capabilities development in the work of scholars such as Chen et al. (2008) and Froehle and Roth (2007).

Finally, marketing academics (Paswan et al. 2009; Song et al. 2009; Lusch and Nambisan 2015) have highlighted a novel paradigm in marketing theory, SDL, in order to explain the innovation process in service firms. SDL focuses on the process of value creation whereby the actual outcome is a bundle of products and services which satisfies customers' needs (Baron et al. 2009; Lusch and Vargo 2006; Lusch and Nambisan 2015). Most importantly, the SDL framework includes a strategic focus on any market-driven organisation that originally comes from the marketing concept, i.e. a focus on the customer (Lusch and Vargo 2006). However, there are two specific issues within SDL that have been extended to SI research, namely value co-creation and operant resources development (Ordanini and Maglio 2009; Ordanini and Pasini 2008; Paswan et al. 2009). The SDL principles of value co-creation reflect directly in service practices, where, according to Jana (2007), innovation is an open and collaborative process lying within the principles of collaborative learning and knowledge creation.

The latter aspect is interrelated with the dynamic capabilities view, which forms a path to continuous innovation and sustainability through the development of absorptive capacity and patterns of strategic adaptivity and flexibility, which in turn transform organisational routines (Teece et al. 1997) (Madhavaram and Hunt 2008). Notions on continuity and openness in the innovation process are evident within most works representing the third theoretical stream (Drejer 2004; Gallouj and Weinstein 1997; Ordanini and Maglio 2009, Table 2).

According to Flikkema et al. (2007, p. 543), integrated studies on SI "*have thrown light on neglected aspects of innovation process in general.*" This might explain why the majority of recent studies around service innovation adopts the integrated stream.

3.2.2. Definitional dilemma

The existence of numerous theoretical foundations in the service innovation research has brought to light a problem in terms of defining the term 'service innovation'. Table 3 illustrates how academics such as Oke (2007), Sundbo (1997) and Barras (1986) have attempted to define the SI concept.

Table 3. Definitions of Service Innovation

Author(s)	Concept	Methodology
Xinhui (2008)	Service Innovation	*"New or considerably changed service concept or service delivery processes that deliver added value to the client by means of new or improved solutions to a problem; methods of improving performance; a desired opportunity for consumption or consumer services."*
Tekes (2007)	Service Innovation	*"A new or significantly improved service concept that is taken into practice."*
Mansharamani (2005)	Service Innovation	*"The introduction of a new service offering (akin to 'product innovation') or the development of a new way of delivering a service (akin to 'process innovation')."*
Oke (2007)	Service Innovation	*"Variations in product delivery or add-on services embellishing the service experience for the customer."*
Sundbo (1997)	Service Innovation	*"A new service or such a renewal of an existing service which is put into practice and which provides benefits to the organisation that has developed it; the benefit usually derives from the added value that the renewal provides the customers. In addition, to be an innovation the renewal must be new not only to its developer, but in a broader context, and it must involve some element that can be repeated in new situations, i.e. it must show some generalisable feature(s). A service innovation process is the process through which the renewals described are achieved."*
Gadrey et al. (1995)	Service Innovation	*"... assumes two main forms: (1) organising the solution of new problems or conceiving formulas or even service products which are to varying degrees new to the market or new to the firm (ranging from mere improvements to radical new forms); (2) a more efficient (in terms of productivity, relevance, or quality) way of organising a solution to the same type of problem."*
Sundbo (1994)	Service Innovation	*"A new element or a combination of old elements that creates a value added to the firm."*
Flikkema et al. (2007)	Service Innovation	*"A subset of service development."*

Author(s)	Concept	Methodology
	Service Development	*"A change of the employed resources, competences or capabilities, supposed to enable the realisation of a firm's transformational intentions."*
Roper and Hewitt-Dundass, 2004 (Cited in Tether, 2005)	Innovation in Services	*"... best seen as a form of collective or collaborative problem solving, in which networks of companies work together to meet a market need or opportunity."*
De Jong and Vermeulen (2003)	Innovation in Services	*"... mostly involves small and incremental changes in processes and procedures."*
Den Hertog (2000)	Innovation in Services	*Represents a four-dimensional model where changes occur in one or more than one of the following dimensions: the service concept, the client, the delivery system and technological options.*
Barras (1986)	Innovation in Services	*A trajectory of "reverse product cycle: improvements in the efficiency of delivering existing services lead to quality improvements, eventually yielding to new service offerings."*
Sundbo and Gallouj, 2000 (Cited in Flikkema et al. 2007)	Innovation in Services	*"A loosely coupled system, with both technological and non-technological trajectories."*
Toivonen and Tuominen (2009)	Innovation in Service Firms	*"A collective process: a combination of strategic management and broad intrapreneurship (intra-firm entrepreneurship)."*
Menor and Roth (2007)	New Service	*"An offering not previously available to the firm's customers that results from either an addition to the current mix of services or from changes made to the service delivery process."*
Johnson et al. (2000)	New Service	*"An offering not previously available to customers that results from the addition of offerings, radical changes in the service delivery process, or incremental improvements to existing service packages or delivery processes that customers perceive as being new."*
Johne and Storey (1998)	New Service Development	*"The development of service products which are new to the supplier."*
Edvardsson (1997)	New Service Development	*"The whole process from idea to the market introduction of a new service."*
Bernstein, 1990 (Cited in Johnson et al., 2000)	New Service Creation	*"The process comprising the set of activities executed to create a new or enhanced customer service."*

Author(s)	Concept	Methodology
Berry et al. (2006)	Market-creating Service Innovation	*"An idea for a performance enhancement that customers perceive as offering a new benefit of sufficient appeal that it dramatically influences their behavior, as well as the behavior of competing companies."*

The wording itself, however, has not been consistent throughout the years, or in theoretical doctrines. Concepts such as service innovation, innovation in services or service firms, new service, new service development or creation have been used interchangeably by scholars, in order to describe innovation in the service sector. Nevertheless, the researcher argues that there is a need to unify these notions and to define each concept individually in view of the fact that new service creation, for instance, is considered to be just one element of SI (Miles 2009).

Innovation is a dynamic process and therefore a complex construct for analysis (Hortelano and Moreno 2008). Traditional terminology adapted to the manufacturing context identifies innovation in technological terms and measures performance on the basis of output sales and returns on research investment, i.e. R&D. However, as it sounds paradoxical, innovation is primarily a process which is closely linked to service activity that appears to be a discontinuous system of interaction among elements (Robertson 1967; Clayton 2003).

Considering service innovation as a process, and generalising such a term, appears to be a problematic task due to the ad hoc nature of each service activity. As it has been stated in previous sections, standardisation is essential for further developments in service innovation research as well as the practical implication of such practices, as innovation does not take place without commercialisation and the embedding of invention into organisational routines (Rogers 2003). As a result, the author recognises the need to establish a unique service innovation definition by analysing each element individually and finally consolidating both terms into a single expression that explains the notion

The lack of a clear definition of innovation in the service industries is due to the 'fuzzy' nature of service processes, which might also include goods as part of the overall experience (the service-goods dilemma) (Droege et al. 2009). Innovation, in general terms, is defined as "*any profitable commercialisation process, product, or technology which changes society, and the way people exist in the world*" (Miller et al. 2005/2006, p. 63) However, considering the unique nature of service activities with 'servuction' or

'prosumption' characteristics, innovation in services is seen more as a process starting from a novel idea and leading to the adoption of a new service "*to the carrier population*" (Metcalfe and Potts 2007, p. 9; Edvardsson and Olsson 1996; Edvardsson 1997; Miles 2001). Nevertheless, others will argue that what actually matters in, say a delivery service to the customer is an actual parcel, and what matters in restaurant service is food. This issue has led to the emergence of the new stream of marketing research mentioned in the previous subsections, namely SDL, which treats goods and services under a single category – services (Lusch and Vargo 2006).

As a result, the process and actual outcome are interrelated, or interconnected in the case of services, where innovation is defined *as* "*a new element or a combination of old elements...* [in a bundle of capabilities and competences that lead to a solution to a customer's problem] *that creates a value added to the firm*" (Sundbo 1994, p. 249). Toivonen and Tuominen (2009) moved a little further in explaining SI from the firm perspective, by stressing the role of strategic determination and entrepreneurial orientation.

Nevertheless, the formulation of the SI term remains an issue of debate among academics considering the existence of numerous innovation patterns in diverse service firms.

3.2.3. Patterns of service innovation

Nevertheless, the existence of three schools of thought within SI research hinders the composition of a holistic portrayal of the nature of innovation processes in service firms. However, studies, particularly on patterns and typologies of innovation as wells degrees of innovativeness (Amara et al. 2009; Den Hertog 2000; Vence and Trigo 2009), have become a central aspect for discovery and have evolved tremendously. Innovation patterns in service firms, have been eventually downgraded to two streams of developments within the technological (process and product) and non-technological (delivery, strategic, managerial and marketing) areas (Amara et al. 2009). Product radicalness as an innovation characteristic is adopted within the services context, where Gallouj and Weinstein (1997) named a totally new service and changes in elements of the service system as options within a continuum of service innovativeness degrees. In regards to process analysis, the other three patterns have been developed to construct a new concept of modulisation, where the standardisation of service processes, often not the case for services, is possible (Gallouj and Weinstein 1997):

1. Architectural or recombinative pattern – the bundling or unbundling of elements within a new service development (NSD) system.
2. Formalisation innovation – variances in the degree of 'visibility' or the standardisation of competences, technical characteristics or service characteristics.
3. Ad hoc pattern – a really interesting dimension, which perhaps is only evident in the case of services – is a unique solution for a specific client in a specific situation. It should be noted, however, that this solution at some point has to be implemented within organisational routines (Toivonen and Tuominen 2009).

In addition, Den Hertog (2000) proposed the following SI patterns by taking the interaction element between service firms and its value chain actors as a determining factor:

- Supplier-dominated innovation (e.g. introduction of an iPhone or a Blackberry).
- Innovation in services (e.g. introduction of a new business concept).
- Client-led innovation (e.g. software for applications in cell phones; mobile education).
- Innovation through services (e.g. management consultancy innovates through solving a client's problem).
- Paradigmatic innovation (e.g. smart-cards, mobile broadcasting).

SI taxonomy has remained a main issue for studies such as Evangelista (2000) and Miozo and Soete (2001), who have concentrated purely on classifying service industries. Evangelista (2000), in addition, found similarities between manufacturing (33.1% companies of the sample form innovating enterprises) and services (31%), where service firms can excel in the creative use of "*technologically advanced artefacts*" (Flikkema et al. 2007, p. 542). Moreover, the acquisition of new IT or development efforts in terms of research and development (R&D) is substituted by know-how in software development and the provision of unique solutions to clients' problems through the unique use of technologies (Evangelista and Sirilli 1998).

An early study by Manu and Sriram (1996) found that firms which focus on SI activities perform lower in terms of profitability and poor image. However, research by Chen and Tsou (2007), who conceptualised SI within the process context by focusing on service innovation practices (SIPs), examined the relationships between SI and competitive advantage in financial firms. SI was found to relate positively to external and internal

competitive advantages, and as a result, the assumption regarding the positive impact of SIPs on a firm's performance is logical.

Despite the fact that the number of quantitative studies is rising, the majority of SI research papers continue to be of a conceptual nature, where the definition and nature of the subject matter remain critical issues for debate (Droege et al. 2009). Thereby management aspects are investigated and analysed from a variety of perspectives.

3.3. The Process of Service Innovation: The Role of Strategic Capabilities

The capabilities perspective, as seen from the theoretical discussion in Chapter 2, is closely related to innovation activities. Primarily, capabilities are deployed and developed in order to produce innovative outcomes and to balance ongoing exploration and exploitation activities (Jones et al. 2014a). This is also the case with technological capabilities that contribute to both explorative and exploitive opportunities in firms (Belderbos et al. 2010). Moreover, Andes and Castro (2010) assume that mobile technology employment by businesses will result in the creation of innovative solutions and services in the future. Therefore, it is reasonable to explore whether, in reality, mobile technology capabilities have any impact on SI.

Competition has become a critical issue within the service sector, where firms are struggling in an attempt to find solutions to survival and sustainability. Strategic marketing proposes the importance of organisational orientation that motivates the drive toward competitive advantage. In fact, this assumption has been proved to work in both the product and the service context. As such, service firms – similar to manufacturing firms – need to innovate, in order to remain competitive. Having, nurturing capabilities that are unique to a firm is a solution to the unique combination of firm resources, and hence to innovation (Jones et al. 2014a; Zahra 2006).

Day and Winsley (1983, p. 83) state that innovation is "*one of the core concepts*" that exists in marketing theory. Marketing orientation as a behavioural and a cultural dimension of a firm plays a crucial strategic role in the determining the successful performance of a service firm (Jaworski and Kohli 1993). Therefore, marketing orientation becomes an initial point which directs resource reconfiguration and capabilities development and drives profit maximisation.

In particular, marketing orientation structures organisational goals. Today, such goals start with satisfying customers' needs and wants and staying ahead of the competition, and then ending with the coordination of all activities within the organisation (Narver and Slater 1990; Shapiro 1988). Narver and Slater (1990) and Kohli and Jaworski (1990) prove that market-oriented firms experience subnormal profitability. A reactive approach to market changes shows the ability of the firm to construct business intelligence through gathering and disseminating market information as well as the implementation of actions based on such intelligence (Jaworski et al. 2000; Jaworski and Kohli 1993; Kohli et al. 1993; Narver et al. 2004). However, the reactive mode of marketing orientation primarily results in incremental changes.

Nevertheless, innovation is frequently perceived as something unique and creative. On the other hand, through the invention of new products or processes, firms and innovators attempt to anticipate the latent needs of consumers by using marketing orientation as a strategic tool (Olavarrieta and Friedmann 1999; Song et al. 2009).

Furthermore, Day (2000) proposes a concept of market-relating capabilities that positively affects the innovativeness of firms. These capabilities represent the integration of IT and marketing orientation, because IT is a communication, integration and innovation-enabling mechanism that gathers information about market needs and enables one to be proactive in simulating future desires. Hence, market-sensing capabilities, relating market research to organisational goals, are all practiced through IT deployment.

3.4. Role of Information Technology in Service Innovation

Despite the fact that the role of IT has been extensively researched in the new product development (the product innovation) context (Belderbos et al. 2010; Danneels 2002; Zhou and Wu 2010), there are a limited number of studies focusing on understanding the role IT has in SI. Among these few is a study by Chen and Tsou (2007; 2012), who simply adopted models used in researching NPD and hypothesised that IT adoption (Chen and Tsou 2007) and IT capability (Chen and Tsour 2012) have a positive impact on SIPs. Their results confirmed that SIPs are stimulated and facilitated through IT. Interestingly, though, Chen and Tsou (2007) found that investments in IT need to be reconsidered and activated on a continuous basis. This also should be considered on a strategic level, because the adoption of IT leads to restructuring organisational

processes and also enables the smooth exchange of individual knowledge into the organisational knowledge base.

To conceptualise SI, Chen and Tsou (2007) adopt a practice perspective (SIPs) to emphasise the ongoing and simultaneous nature of service production, delivery and consumption. In so doing, they divide SIPs into two categories, product service innovation practices (SIPPd) and process service innovation practices (SIPPc). The SIPPc group includes customer-related process activities such as service, information and consultation services, selling and after-sales activities and internal organisational aspects associated with production, such as new service development, promotion and administrative activities (Chen and Tsou 2007). The SIPPd group is characterised and analysed on the basis of innovativeness degrees such as improved services, repackages or extended products and, finally, newly created and produced services. The above categorisation is not a path to follow blindly, but it nevertheless represents a map of directions in which to explore the field.

In addition, Bygstad and Aanby (2010) illustrate that a strong emphasis on and investments in comprehensive IT infrastructure supports transformation and efficiency in operational processes through the effective integration of information exchange and integration. A central IT system helps in developing new operational services, since IT supports the SI process. Moreover, studies by Higon (2013) and Jones et al. (2014b) conclude that IT is the main components that can enable innovation in smaller in size companies, SMEs (Higon 2013) and micro businesses (Jones et al. 2014b).

3.5. Service Innovation and Technology Deployment: Gaps in the Literature

An overview of theoretical developments on the issue of innovation in services highlights clear avenues for further exploration. Existing efforts to measure and operationalise SI are viewed by the author as disproportional to the amount of studies which explore the issue by employing an inductive approach. A definition of the subject matter, primarily, has to be established on the basis of how service industry practitioners understand innovation in their context. Therefore, an in-depth investigation into what SI means to service firms, specifically, within the creative sector and of a particular size - SMEs, forms one of the objectives of this research. As such, the following research objective needs to be addressed through empirical research:

3. *To understand service innovation and define the service innovation concept within the context of creative service SMEs.*

Questioning the meaning of a subject and building an overall picture on an issue has to be approached in a specific manner. Suffice to say that innovation, more often than not, is determined as an outcome element. However, considering the dynamic nature of service production and the unclear definition of what comprises the final product, the process perspective needs to be integrated. Therefore, the author employs the approach taken by Chen and Tsou (2007) in conceptualising SI from the practice perspective. The practice element emphasises the procedural, ongoing and complex nature of the issue. As a result, respondents will be willing to reveal aspects within the SI production system rather than just naming innovative outcomes. An analysis of the activities chain can be initiated through the notion of the practice side.

Moreover, by making an investigation into the role and whether mobile technology deployment can have any impact on SI, Chen and Tsou (2007) tested the relationship between IT adoption and SIPs, where the employment of IT in the financial sector stimulated SI positively and significantly. Technological advancements have been viewed historically as elements to trigger innovation practices in services; however, mobile technology appears to be a new stream of IT, the specific impact of which has not been explored. This in-depth investigation will allow for tracking the diversity of impact areas outside the boundaries of Chen and Tsou's (2007) categorisation. Consequently, the final research objective to be addressed in this thesis is:

4. *To explore whether, and to what extent, mobile technology capabilities stimulate and facilitate service innovation practices (SIPs) within the context of creative service SMEs.*

3.6. Chapter Summary

This chapter has briefly outlined findings from the existing research concerning the nature of SI, as well as outlined what role fixed networks and stationary desktop IT play in the innovative practices of service firms and service SMEs in particular. Existing research identifies that scholarly debate around the nature of SI, which includes its definition and conceptual understanding, is an ongoing process. Seeking an empirical explanation from the practitioner's point of view in this thesis will potentially allow for enriching the conceptual understanding of the SI term. Although the vast amount of scholarly research studies the role of fixed networks and stationary desktop IT in

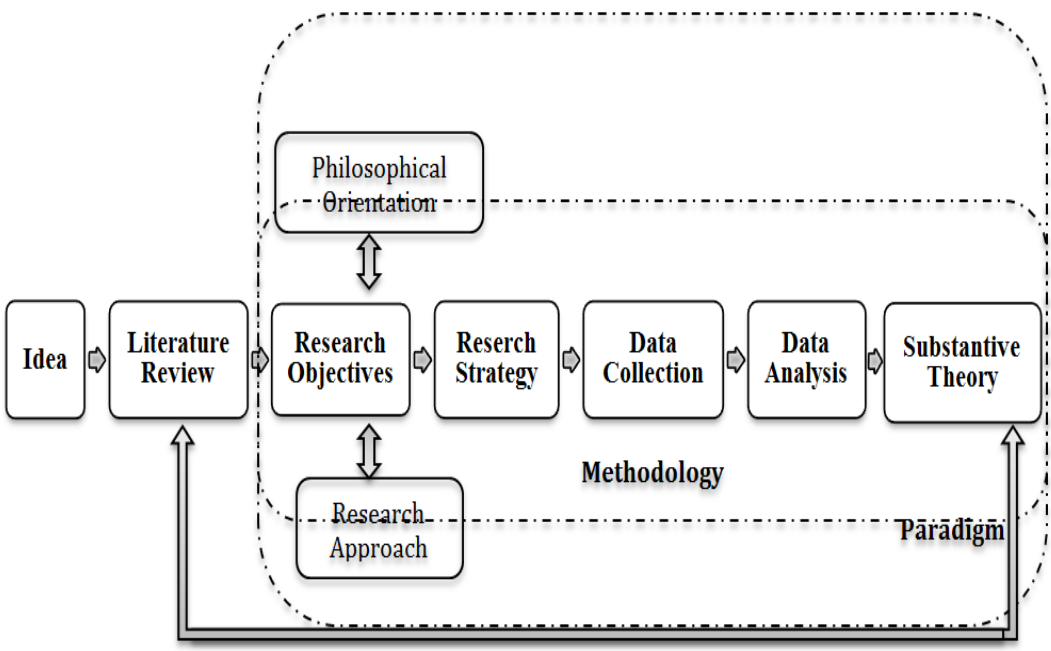
stimulating and facilitating SI, new and ubiquitous possibilities that come with the use of mobile technology might play a different role in SI practices. This chapter completes the theoretical sensitivity aspect of this research, prior to undertaking the empirical fieldwork. In addition to two research objectives proposed in Chapter 2, two research objectives concerning SI and the relationship between SIPs and mobile technology capabilities have been formulated. The next chapter revisits the research objectives and discusses the methodology adopted to address the four research objectives emerging as a result of the literature review.

Chapter 4. Research Methodology

4.1. Overview of the Chapter

Following the literature review and identification of the topics of interests (see Figure 7), the next stage of this research was to design and implement a research strategy aimed at studying mobile technology capabilities and their role in service innovation practices in creative service SMEs. This chapter introduces, justifies and explains the methodological choices, the author has chosen. Firstly, the research aim and objectives are reviewed to select the appropriate research approach. Then in line with the selected qualitative approach, the philosophical orientation of this study is discussed and determined. Once the methodological options of the possible research strategy are deliberated, the author proceeds with introducing the research strategy, grounded theory, its use within this study and issues related to building and grounding theory from empirical data. The final two sections (4.5. and 4.6) of the chapter demonstrate implementation of the chosen research strategy in this study, firstly, focusing on the data collection and then explicating the analysis of empirical data.

Figure 7. Research overview



4.2. Review of the Research Aim and Objectives – Determining the Research Approach

The literature review (Chapters 2 and 3) locates the aim of this study within the wider domain of strategic management research. Moreover, exploring mobile technology deployment in an organisational setting indexes this study as 'information system research' (Orlikowski 1992, 2000; Orlikowski and Gash, 1994). In particular adopting a capability perspective and RBV this thesis aims:

> To investigate the role of mobile technology capabilities in creative service SMEs' innovation practices.

Four objectives address this aim (First introduced in Chapter 1, section 1.6):

1. To discover how creative service SMEs deploy mobile technology;
2. To conceptualise mobile technology capabilities;
3. To understand service innovation and define the service innovation concept within the context of creative service SMEs;
4. To explore whether, and to what extent, mobile technology capabilities stimulate and facilitate service innovation practices within the context of creative service SMEs.

Before proceeding to the discussion of the chosen research methodology, the author needs to reflect on the aim and objectives of the research examining the research objects and desired deliverables. Explicit clarification of what motivates the research and what a researcher is trying to accomplish aids identification of the appropriate research approach (Berg 2006; Denscombe 2010).

Firstly, the main objects of this study are 'mobile technology capabilities' and 'service innovation practices (SIPs). Evolved from the terms 'capability' and 'IT capability' the term 'mobile technology capability' refers to a firm's practices that involve deployment of mobile technology resources in combination with firm's skills and competences (see Chapter 1, section 1.5 and Chapter 2, section 2.3). SIPs are defined as a combination of innovation activities that involves adding new and enhancing existing service outcomes (the Service Product Innovation Practices (SIPPd)) and improving service delivery and the customer communication processes (the Service Process Innovation Practices (SIPPs)) (De Brentani 1989; Chen and Tsou 2007, see Chapter 3). Hence, this thesis

aims to explore the hybrid of technological (hardware, software, networks), human (people) and social (processes and practices) research objects (Kroenke 2012). In turn, the hybrid and complex nature of the research objects due to emphasis on processes and practices hinders possibilities for rigorous measurement and evaluation of the role of mobile technology in creative service SMEs' innovation practices in terms of impact, value, intensity and frequency (Denzin and Lincoln 2011).

Secondly, the above listed research objectives of this study show that the intended research deliverables, i.e. 'nature', 'interactions' and 'relationships' between mobile technology capabilities and service innovation practices are likely to be conceptual and broad. Therefore, defining them in quantitative terms can be problematic. The intellectual purpose of this study includes fundamentally an understanding of meanings; thus, the actor's interpretation of the processes and experiences - a human-centric perspective upon situations and events. Hence, due to the qualitative nature of the research deliverables it seems prudent for this study to adopt a qualitative approach.

Thirdly, the majority of studies adopting a quantitative approach are based on existing body of knowledge aimed at informing or expanding existing theoretical constructs. Given the current state of scholarly research on mobile technology and service innovation practices, adopting existing theoretical constructs appears to be, in the author's opinion, unsound because of the fragmented nature of existing knowledge with some studies (Heilig and Vob 2015) unjustifiably borrowing existing theoretical concepts from different research domains and with other studies (Cousins and Robey 2015) being narrow and mostly speculative in nature. In particular, studies on mobile technology management and adoption (Picoto et al. 2014) over-rely on knowledge gained from investigating fixed networks and stationary IT management and adoption, and in the majority of studies (Chen et al. 2011; Bankosz and Kerins 2014) focusing on technical qualities and elements such as ease of use, maintenance and systems design. Attention has to be made to process specific factors, such as the role of users in managing and deploying mobile technology. Moreover, research investigating the role of mobile technology in service innovation focuses on a single organisational case (Talati et al. 2012) or on consumer context (Park and Kim 2014) studying technical qualities and user/firm acceptance of mobile technology. Generally, the existing body of knowledge consists of distinctive and disjointed studies which, in the author's opinion, are not interlinked to build meaningful conclusions. Hence, this study is concerned with

building new theory rather than formulating and testing hypotheses derived from existing theories.

Having said that, this study is essentially nomothetic (Denzin and Lincoln 2011) in its motivation because ultimately the author aims to integrate research deliverables within a model, and constructs, i.e. mobile technology capabilities, that can be used to explain the phenomena (research objects) outside of the contextual boundaries of this study. However, due to the fragmented condition of existing knowledge this study is emic and ideographic (Denzin and Lincoln 2011) in its commitment, meaning research objects are explored in concrete settings with specific contextual boundaries. Research deliverables have to be evaluated acknowledging their limited applicability. Thus, this study is concerned with building a substantive rather than formal theory. In this way, outcomes of this thesis are an *"emergent construction"* (Weinstein and Weinstein 1991, p. 161; cited by Denzin and Lincoln 2011) using interpretive and analytical story-telling practices where empirical data initiate, orient and ground the theory.

Furthermore, today a vast amount of studies within the strategic management and information systems domains adopted a qualitative approach. In fact, a qualitative approach dominates the research field concerning understanding the management of fixed networks and stationary IT. Hence, principles of reliable research practice are developed and the validity of the qualitative approach is widely accepted.

4.3. The Philosophical Orientation

Underpinning any academic research is a philosophical perspective, namely the underlying basis of methodological assumptions (Holden and Lynch 2004). To avoid duplication and the use of terms adopted by different authors (Collis and Hussey 2009; Creswell 2014; Creswell et al. 2007; Guba and Lincoln 2003) to describe a system of philosophical beliefs grounding the research, the author adopts Creswell's (2014) terminology in naming the philosophical foundation and orientation of this study as a philosophical perspective or paradigm. The research paradigm frames a researcher's worldview and guides the process of conducting research and interpreting results (Collis and Hussey 2009). Furthermore, the research paradigm is concerned with a set of assumptions about the nature of the subject investigated and the ways by which knowledge about the subject can be gained (Pettigrew 1985).

Thinking effectively about and explicating the philosophical perspective the researcher adopts can have a dual effect on the researcher (Holden and Lynch 2006). Firstly, new approaches and possibilities can be identified in understanding reality. Secondly, the level of confidence in making the right choices regarding the research strategy and the interpretation of results increases.

Research methodology scholars (Collis and Hussey 2009; Creswell 2014; Denscombe 2010; Guba and Lincoln 2011; Robson 2002) distinguish three key research paradigms – positivism (seen as a more scientific method), interpretivism or constructivism (focuses on social actors and their interactions and is subjective in nature) and critical theory (uses primarily objective means but with the help of subjective evidence to interpret reality critically).

According to Guba and Lincoln (2011), the decision regarding the research paradigm is a reflection and understanding of the researcher's own system of beliefs about the world. Having said that, the suitability of the research paradigm also depends on the nature of the research object (Morgan et al. 1980). Hence, to determine the right paradigm for this thesis the author reflects on both her own system of beliefs and the nature of the research objects using as the guiding criteria the following three constituents, ontology, epistemology and axiology.

1) Ontology enables the researcher to envision the nature of reality, forms in which the reality exists (Grix 2004). This thesis is about the deployment of mobile technology and its role in SIPs of creative service SMEs; hence, the technology is an integrated (dependant) part of a business setting (the hybrid nature of the research objects). The way organisations deploy mobile technology changes constantly; thus, the reality to be captured and portrayed by this study represents snapshots deriving from actors' recollections of their experiences, the researcher's direct observations and documentary evidence. This suggests the appropriateness of the relativism ontology with emphasis on specific and local constructed realities because research objects (mobile technology capabilities and SIPs) in this study cannot be meaningfully explored in isolation from the setting in which they exist. However, this research explores mobile technology capabilities in its core; hence the technology element represents 'the real' reality, which can be observed objectively aiming at prediction and explanation. The preferred ontological position for this study is critical realism meaning that

there is a possibility to relatively interpret a historical reality presented by multiple facts such as actors' memories, documents and the author's observations (Guba and Lincoln 2011).

2) Epistemology enables the researcher to envision the nature of knowledge and to decide on how he or she can learn about a particular reality (Blaikie 2000; Grix 2004; Holden and Lynch 2004). As stated above in this study research outcomes are the author's interpretations of actors' memories ('soft' information), documents ('hard' factual information) and the author's observations. The author's observations in this study have a strong tendency towards objectivity as prior to entering the research field the author did not have any past work experience within the contextual setting of this study, namely creative service SMEs. Thus, no pre-existing knowledge will influence the interpretation of the primary results. The researcher (a 'dispassionate' scientist in Guba and Lincoln' (2011) words) and the research objects can be easily separated meaning the preferred epistemological position for this study is dualist, which implies a researcher's relative independence from a research object (Guba and Lincoln 2011).
3) Finally, axiology specifies the role of values that affect a researcher's belief system and as a result the process of conducting and interpreting results (Collis and Hussey 2009). Reflection underpins any research process, unless value-free research is conducted; however, the author argues that even an interpretation completely objective in nature is affected by said researcher's values; hence any research outcomes are propositional in its nature.

Table 4 illustrates the above discussion by profiling the research paradigms relevant for this study.

Table 4. Profile of this study's paradigm (after Guba and Lincoln 2011)

Paradigm Constituents	Key Paradigms				Meaning for this study
	Positivism	Postpositivism	Interpretivism/ Constructivism	Critical Theory	
Ontology	Real' reality but apprehensible	Critical realism	Relativism – co-constructed and subjective realities	Reality is useful and is practical independent of the mind as well as that lodged in the mind.	Reality is represented by facts which may include constructions of reality (actors' memories) and historical data (documents) – **postpositivism, interpretivism & critical theory**
Epistemology	Researcher is independent from the research subject and/or object (dualist/objectivist); Research outcome – explanation and prediction.		Researcher interacts with the research subject and/or object (subjectivist); Research outcome – reconstructions and understanding of experiences.	Researcher uses many tools of research that reflect both objective and subjective evidences; Research outcome – generalised understanding by similarity.	The researcher is a 'dispassionate scientist', independent of the research objects; Desired research outcome – understandings of nature and explanations of interactions and relationships between the research objects**,** which are generalised based on similarities across cases **– postpositivism and interpretivism.**
Axiology	Research is unbiased and value-free, propositional outcomes.		Research is value-laden and individual values are honoured in constructing co-constructed outcomes.	Values are discussed because of the way the knowledge reflects both the researcher's and participants' views.	Values are acknowledged but outcomes are propositional **– postpositivism.**

As shown in Table 4 this study includes elements of interpretivism where the nature of research outcomes is concerned (the experiences and meanings actors within creative firms attribute to the research objects, mobile technology capabilities and SIPs build the grounds for empirical examination and evaluation) and elements of critical theory when the nature of reality to be explored is concerned ('soft' and 'hard' sources of data to portray the world). This study could, therefore, adopt a multi-paradigmatic orientation to qualitative research. However, Table 4 strongly suggests that the most appropriate paradigm for this study is postpositivism. Despite the fact that mobile technology can represent the given or 'received reality' which exists independently and can be described objectively (pure scientific stance within the positivistic stream – positivism), accepting qualitative facts increases relevance in exploring the main research objects, 'mobile technology capabilities' and SIPs, and relationships, interactions between the research objects. This is due to the fact that qualitative facts deriving from actors who experience and deploy mobile technology, emic setting, need to be included in the research. In this study emic setting includes on one side integrated systems of mobile technology and supporting systems and networks and on the other side creative service SMEs which are independent distinct social and cultural entities. Hence, to achieve the aim and objectives of this study, understanding the nature of mobile technology capabilities and SIPs and interactions and relationships between these two research objects, it is critical to consider the role of the emic setting on research outcomes – this according to Guba and Lincoln (2011) is an important characteristic of the postpositivist stance.

Moreover, the intended research deliverables (see the previous section 4.2.) illustrate that this study aims at exploration on one hand and explanation on the other hand; hence, positioning this study in-between positivism and critical theory where a probabilistic view of reality derives in the form of a substantive context bound theory. As opposed to pure scientific philosophical stance (positivism) postpositivism includes discovery, theory building in this study's case, as a valid methodological objective. All nuances of building, 'discovering' the theory are discussed in the next section (subsection 4.4.4.). Besides, the author is not dealing with 'untapped' philosophical choices. There are precedent studies, particularly within the information systems research domain that successfully adopted a postpositivist paradigm to discover the theory and appreciated multiple sources of data to achieve generalisation by looking at

similarities between meanings and incidents (Gregg et al. 2001; Fernández and Lehmann 2005).

4.4. The Research Strategy

Once the author was clear about the philosophical orientation and the research approach most suitable for this study, actual implementation of the research required a clear strategy. A research method or strategy provides a detailed direction for the data collection, analysis and interpretation (Crotty 1998; Creswell 2014). The qualitative approach provides the research with diverse choices regarding contextual settings, data collection instruments and data sources, which explains the variety of qualitative research strategies available to researchers. Hence, this section examines possible strategies before detailed discussion of the research strategy chosen for this study.

4.4.1. Examining possible research strategies

In a nutshell, research strategies are concerned with understanding the type of information that will address the research aim and objectives; how such information can be gathered and then evaluated to produce intended research deliverables. Hence, the choice of an appropriate research strategy needs to be based on the type of information to be obtained, which in this study has a dual nature representing (1) the facts about mobile technology deployed by creative service SMEs and (2) implicit elements of mobile technology capabilities as well as linkages of these elements with service innovation practices (SIPs).

The hybrid nature of the research objects discussed in the previous sections requires a research strategy that can cater for collecting and analyzing information which is diverse in nature. The collection and analysis of multiple facts can be catered for by multiple research strategies within the qualitative stream, to name a few, case study, phenomenology, ethnography, participatory action research (Creswell 2013). All qualitative research strategies aim to describe facts which most importantly can have the social aspects. In this study the social aspects of the mobile technology deployment are the characteristics of firms and the actions of these individuals who deploy mobile technology, the business processes and operations. Considering this, a case study and a participatory action strategy are seen as the best way to approach research where large a number of complex elements/phenomenon is to be examined (Creswell 2013).

However, the second aspect of the information to be obtained for this study is mostly suited to a scientific method of inquiry within the quantitative stream such as surveys

and experiments. This is only possible with the presence of sufficient theoretical underpinnings on which hypotheses can be based. For this study the fragmented nature of existing literature and knowledge suggests building new theory, execution of which is possible with a limited number of qualitative research strategies.

Having said that the author thought that shortlisting and reviewing potential qualitative research strategies from a broader perspective was important in stronger in providing a justification of grounded theory, the research method chosen for this study. Given the arguments discussed above, the author selected four possible research strategies (see Table 5 overleaf) from Creswell's (2013) list of the best established qualitative research strategies, with the inclusion of the participatory action research (Baum et al. 2006; Atweh et al. 1998).These four strategies are briefly explained next, with a focused discussion of grounded theory, the research strategy chosen for this study.

Table 5. Overview of the main qualitative research methods

Type of Qualitative Research Strategy	Purpose	Types of Research Questions	Features
Ethnography	Describing and interpreting a culture-sharing group	In-depth, descriptive, structural (i.e. basic units of participant's cultural knowledge), contrast (i.e. meaning of the various terms used to describe similar or contrasting expressions) to outline a history of a culture in question	Unit of analysis – the group that shares the same culture; Data collection types – observations, interviews; Data analysis approach – description and thematic analysis of culture-sharing group.
Case Study	Developing an in-depth description and analysis of a case or multiple cases	In-depth, descriptive questions about impact and role of different cases for a particular issue	Unit of analysis – an event, a program, an activity or more than one individual; Data collection types – multiple sources including interviews, observations, documents, artefacts; Data analysis approach – Description of the case and themes of the case as well as cross-case themes.
Participatory Action Research	Enabling action, understanding and improving practices and situations	Community action questions on how changes occur within a community	Unit of analysis – a process, an action, and social relationships, a researcher; Data collection types – self-reflective inquiry that researcher and participants undertake using both qualitative (interviews, observations etc.) and quantitative (survey) techniques to collect data; Data analysis approach – reflective cycle of repeated collection and analysis phases to identify emergent themes and recurrent patterns.
Grounded Theory	Developing a theory grounded in data from the field	Process questions about experiences and changes over time	Unit of analysis – a process, an action, an interaction involving many individuals; Data collection types – interviews with approximately 20-60 individuals; Data analysis approach – three stage coding: open coding, axial coding, and selective coding.

Source: Adapted from Creswell (2013) and Baum et al. (2006).

Table 5 illustrates that all four listed research strategies, ethnography, case study, participatory action research and grounded theory share similarities such as aiming at the description of facts using similar data collection instruments and enabling an exploration of the emic setting by focusing on individuals, groups and processes, but essentially these four strategies are distinct in their purposes and approaches to data analysis.

Firstly, ethnography focuses on individual experiences by studying individuals or groups of individuals with the purpose of exploring shared beliefs or patterns of behaviour among individuals (Creswell 2013). Researchers applying ethnography first engage with the literature, to determine a central theory that broadly directs them to expected outcomes, and then they engage in fieldwork for the collection of various pieces of evidence such as observation notes, artefacts and interviews (Creswell 2013). The key outcome of any ethnographic study is a holistic portrayal of a particular culture or group through diverse sources of data (Creswell 2013). The two previous statements clearly demonstrate that the ethnographic research method is a challenge, because of time commitments, numerous ethical concerns associated with various data (for instance observation notes) and, finally, a complex reflective and interpretive process (Creswell 2013). Ethnography was found to oppose the philosophical orientation of this study as being a pure interpretivist research strategy relying on construction of meanings by interpreting individuals' and groups' meanings and reflecting on a researcher's experiences and role. Moreover, explanation and evaluation of results on a more abstract level becomes impossible for the ethnographic studies which are contextualised within a very specific timeframe and represent a historical evaluation of experiences.

The second listed research strategy, the case study, focuses on a particular case (Creswell 2014). Cultural groups, single or groups of companies or a specific industrial sector could all be considered as a case which represents "*a real-life, contemporary bounded system or systems*" (Creswell 2013, p. 97). Robert Yin (2009) is the main scholar to refer to when conducting case study research. The key criterion for case study research is having multiple sources of data (Yin 2009). The main challenge, however, is in the careful selection of a case or cases, which must be backed up with a clear justification (Creswell 2013); hence, a sampling strategy is critical. Although a case study strategy enables an etic perspective to research - an independence of the author

from the emic setting, most case studies go down the root of a simple description when it comes to discussion of results without strategies to build a more abstract theoretical evaluation of empirical data (Yin 2009), which devalues and eliminates this research strategy as a possible method to achieve this study's aim.

Participatory action research, which represents quite a distinct method of qualitative inquiry (Atweh et al. 1998), enables the researcher to immerse himself or herself in a process or situation, to understand fully the context and then to initiate changes with the purpose of tracking any improvements as a result of such changes (Baum et al. 2006; Atweh et al. 1998). The author did not have an intention to change any of the firms which participated in this study. Multiple sources of evidence act as common criteria for participatory action studies. A reflective analytical cycle of recurrent patterns and the researcher's active participation are the main instruments of data analysis for the participatory action studies (Baum et al. 2006). However, the researcher's participation of the action research contradicts with the author's epistemological position – being independent from the research objects. Hence, a participatory action research is eliminated from further consideration.

The last research strategy shortlisted as a potential method of inquiry is grounded theory (Glaser and Strauss 1967). Generally, this research strategy studies processes, activities or events (similarly to a case study, participatory action research strategies) shared by individuals (similar to ethnography). Hence, this study's research objectives (4.2.) that inquire in detail about the mobile technology deployment process and service innovation practices fit the process-oriented nature of grounded theory. Traditionally grounded theory is considered a positivistic/postpositivistic research strategy (Annells 1997, p. 177; Mills et al. 2007) essentially because of the distinctive purpose of this research strategy - developing a theory "*where little is already known, or to provide a fresh slant on existing knowledge*" (Annells 1996; Goulding 1998, p. 51). The author was aware of the potential criticism of choosing the mobile technology capabilities and service innovation practices as the research objects. As the literature review chapters (Chapters 2 and 3) suggest theories concerned with the research objects do exist. However, these theories are too vague and abstract. Hence, as Martin and Turner (1983) suggest grounded theory is the appropriate research strategy to provide clarity by building a substantive contextually bound but more detailed theory.

Additionally, the newly generated theory, grounded in empirical data by using a set of robust systematic techniques, is the key outcome of the grounded theory strategy (Corbin and Strauss 1990; Walker and Myrick 2006) that corresponds well with the aim of this study and the dualists epistemological position of the author. The set of systematic techniques, a three-stage coding process, allows the author to explore, structure and evaluate qualitative in nature data by remaining relatively independent from research objects.

Given the philosophical position, research aim and objectives, grounded theory was found as the most appropriate research strategy for this study. In addition, justification for selecting grounded theory comes from the extensive application of grounded theory in consumer research and within marketing in general (Deshpande 1983; Goulding 1998; Lynn 1990), but most importantly within the information systems research field (Fernandez and Lehmann 2011; Lehmann 2001; Lehmann and Fernandez 2007; Sarker et al. 2001). Fernandez and Lehmann (2011), Lehmann and Fernandez (2007) and Lehmann's (2001) studies are devoted to understanding the process of utilising and implementing information systems in the type of organisational setting that corresponds particularly with the topic of this study, namely mobile technology deployment in a business setting.

4.4.2. Grounded theory strategy: An overview

> *"All truths are easy to understand once they are discovered; the point is to discover them."*
>
> *Galileo Galilei (1564-1642)*

The choice of grounded theory as a research strategy specifies the role of the literature in this study and most importantly guides the implementation of the data collection and analysis. Grounded theory has been around since 1967 and the creators of the classical grounded theory approach, Glaser and Strauss (1967), established a comprehensive method of theory building based on six key notions:

(1) The data-driven development of further research stages (formally termed 'theoretical sampling');

(2) Simultaneous data collection and analysis that enables the emergence of concepts and categories (formally termed ‘constant comparison’);
(3) The recognition of importance of existing literature, although later in the research process (formally termed ‘theoretical sensitivity’);
(4) Reflective notes-taking as a way to interpret data on an abstract level by evaluating linkages and relationships between concepts and categories (formally termed ‘memo writing’);
(5) Identification of the main phenomenon (or ‘core’ category) to position the theory and tell the story;
(6) Sampling and data collection based on a theoretical saturation – stopping the data collection once the data offers clarity, depth, breath reoccurrence of understanding about research objects, and no new elements emerge.

Despite the fact that today there are three distinct departures from the principal rules for grounded theory data collection and analysis, the above listed notions should be considered and followed by any study claiming to be grounded theory research (Heath and Cowley 2004; Nathaniel and Andrews 2010).

Nevertheless the broadly defined nature of the classical grounded theory (Glaserian grounded theory - Glaser (2010); Glaser and Strauss (1967)) led to the emergence of various adaptations among researchers who either sought clear systematic instructions regarding data analysis (the evolved or adapted grounded theory - Corbin and Strauss (1990)) or essentially argued that grounded theory research rests on a constructivist research ontology where reality is subjective and co-constructed by individuals and a researcher (the constructivist grounded theory - Charmaz (2006, 2008)).

It is critical to note that theoretical sampling and constant comparison underpin all three versions of the grounded theory method. Nevertheless, classical grounded theory believes in the empirical emergence of theory through the emergence of research questions and problems that are grounded in data (Glaser and Strauss 1967; Melia 1996). No theoretical preconceptions impact on theory development, as theory emerges fully from the data (Glaser 2010). The Glaserian grounded theory is truly inductive, in that it is not forced and it emerges from data (Heath and Cowley 2004).

Strangely enough, the original work by Glaser and Strauss (1967) did not place any particular emphasis on entering the research field without prior knowledge. The role of the literature in classical and evolved grounded theory is a key point of difference (Melia 1996). According to Glaser (Glaser 2009, 2010), broad knowledge about the research area eventually focuses on a particular aspect or aspects through data collection and analysis. Strauss, however, believes in theoretical sensitivity prior to entering the field (Corbin and Strauss 1990). Theoretical sensitivity implies reading through the literature and reflecting on personal experiences, to stimulate understanding around phenomena. Cutcliffe (2000) comments that a prior review of the literature is essential when there are existing concepts, while the purpose of grounded theory is to develop a theory about these concepts. Suddaby (2006) proposes that ignoring the literature is a main misconception when it comes to using the grounded theory method. On this basis, evolved grounded theory is a more appropriate choice for this study, as a prior literature review would help to establish the research focus and to outline a broad set of research questions for addressing through fieldwork.

Classical grounded theory represents a more flexible technique to data analysis (Glaser 2010), whereas Corbin and Strauss's (1990) grounded theory provides particularly novice researchers with a set of techniques and procedures with which to conceptualise findings. Eavis (2001) states that the evolved grounded theory research strategy is particularly helpful in directing researchers on how to proceed with the second stage of the analytical process, axial coding, where categories emerge and relationships between categories are determined.

Data analysis is the main point of divergence between evolved and classical versions of grounded theory research strategy. For instance, Corbin and Strauss (1990) identify the potential for avoiding word-by-word open coding of data, where it is more appropriate to focus on sentences and segments of text, to start initial conceptualisation and categorisation. Hence, the conceptualisation of data is not the final analytical stage, which is the case with the classical grounded theory method (Glaser 2010). Moreover, in addition to memo writing Corbin and Strauss (1990) propose using various techniques (a conditional matrix, an integrative diagram) that help to conceptualise empirical data by tracking and recoding relationships between concepts, categories and properties. Such techniques help researchers to avoid the simple description of raw data

(essentially, the grounded theory method is not content analysis) and enables them to think about data analytically, by "*lifting the data to the conceptual level*" (Suddaby 2006, p. 636).

Past studies exploring electronic data interchange (Crook and Kumar 1998), virtual team developments (Sarker et al. 2001), and social relationships in the context of IT services (Day 2007) successfully used evolved grounded theory, in particular the conditional matrix, to develop a theory about a phenomena. On the other hand, classical grounded theory remains popular due to its flexibility and non-prescriptive nature of data analysis which mostly focuses on identification of theoretical concepts from the empirical data and building hierarchical families of these concepts (Glaser 1992). For this reason the vast number of studies exploring information systems (Lehmann 2001; Fernández and Lehmann 2005; Urquhart et al. 2010) adopt a classical version of grounded theory.

A third grounded theory version, constructivist grounded theory (Charmaz 2006, 2008), represents a more interactive, even more inductive and most importantly reflective process of collecting, analysing and interpreting data (Charmaz 2006). The most important difference of constructivist grounded theory is a philosophical stance on which it rests. As opposed to classical and evolved versions, the constructivist version is based on a pure interpretivism/constructivism paradigm (Denzin and Lincoln 2011). Such discrepancy between a philosophical underpinning of the constructivist version and the philosophical orientation of this study abolishes suitability of the third version.

No single grounded theory method represents the perfect strategy for collecting and analysing data (Suddaby 2006): "*In grounded theory, researchers must account for their positions in the research process*," states Suddaby (2006, p. 640) emphasising the ongoing self-reflection process used throughout the study and understanding the research aim and objectives. Unlike research methods such as case study, phenomenology and narrative, all grounded theory versions are based on the circular research process model introduced by Flick (2009), who believes that circularity through permanent reflection is the key to building plausible theory.

Cutcliffe (2000) stresses the importance of segregating different versions of grounded theory, in order to avoid mixing them together into one fuzzy research strategy.

Nevertheless, Annells (1997) discusses five options of using the grounded theory research strategy, three of which proposes a blend of different versions. Annells (1997) concluded that the decision to slur various versions or use a particular version only should be based on a careful understanding of the research object, intended deliverables, philosophical orientation and practical considerations. The use of constructivist grounded theory has been eliminated immediately as discussed above. However, both classical and evolved grounded theory fit the philosophical assumptions of this study. The next subsection discusses how these two versions of the grounded theory research strategy were used in this study.

4.4.3. Grounded theory used in this study

This study adopted the grounded theory research strategy where all the main notions listed in the previous subsection are implemented. However, as Annells (1997, p. 176) suggests "multiple choices regarding grounded theory method are required, as grounded theorists operate in the present era of inquiry diversity". Inquiry diversity is something that characterises this study with a hybrid nature of the research objects. Hence, following Annells's (1997) advice the author reflected on basic issues to determine the most suitable mode of the grounded theory research strategy for this study.

Firstly, the focus of this research is the relationship between mobile technology capabilities and service innovation practices, which logically encompass social interactions and process – an appropriate inquiry focus for adopting the grounded theory research strategy. Secondly, the author understood practical issues of implementing the grounded theory strategy in terms of inability to plan and predicting the length of the data collection and data analysis stages. Given the aim of the study and the fragmented state of existing knowledge around the research objects, the author accepted the challenge and ensured the availability of mentor, Dr Jacqueline Day, to assist with the implementation of the data analysis in particular. Moreover, the evolved grounded theory version offers a set of systematic techniques to examine the qualitative data. Finally, the philosophical stance and orientation of this study strongly suggest the use of grounded theory as a suitable qualitative research strategy. However, as stated in the previous subsection, only two versions, namely, classical and evolved grounded theory versions can be used in postpositivism research.

The above elaborated arguments and discussion within the previous subsection prove that this study needs to follow the main notions of the grounded theory study by using either classical or/and evolved versions within separate phases of the research strategy implementation. Hence, the grounded theory used for this study involves the following:

1. The author recognised the importance of existing literature throughout the research process and reviewed the literature to determine the aim and objectives of this study. This is in line with Corbin and Strauss's (1990) approach to sensitise the theory using literature and other sources from the beginning of a piece of research.
2. Simultaneous data collection and analysis was the best fit for this study and the author (novice grounded theorist) because it enabled the author to continuously learn, reflect and improve the research process by the constant comparison of different data sets. Constant comparison is used by both classical and evolved versions of the grounded theory research strategy.
3. Constant comparison and simultaneous data collection and analysis facilitated the theoretical sampling used in this study to ensure robustness of the research process and quality of the results. Once again both classical and evolved versions of grounded theory endorse theoretical sampling.
4. In terms of the data analysis the author favoured the systematic and prescriptive nature of the data analysis techniques proposed by Corbin and Strauss (1990); hence, three stage coding is adopted in this study. The three stage coding process, the second stage of axial coding in particular, is foreign to the Glaserian version (Walker and Myrick 2006). Moreover, the author used the conditional matrix as a tool to conduct second stage (axial) and third stage (selective) codings (evolved version), but all patterns and relationships emerged directly from the interviewee transcripts are mostly determined using Glaser's (1992) 'coding families' technique. The 'coding families' technique is much more flexible as opposed to a very prescriptive conditional matrix technique that is helpful in determining complex patterns and relationships between numerous elements. Further details on axial coding are provided in section 4.6., subsection 4.6.2.2. Nevertheless, the author found a conditional matrix (Corbin and Strauss

1990) to be the best technique in understanding and verifying relationships between core categories; hence, grounding the theory.

Overall, this study blended the two versions of grounded theory into one using a blend of data analysis techniques to develop a substantive in nature theory. Annells (1997) recognises such a blend as a legitimate grounded theory option suitable for studies with postpositivist and multi-paradigmatic philosophical orientations.

4.4.4. Theory Building Issues

As discussed in section 4.2., this study is concerned with building new theory rather than formulating and testing hypotheses derived from existing theories – a focus of any research adopting the grounded theory research strategy. Nevertheless the theory means different things to different people. Essentially it was critical for the author to understand the meanings and types of 'theory' in general as well as define the 'theory' in the context of this study. This subsection ends with the discussion of quality criteria available which is used to evaluate the theory grounded in this study.

4.4.4.1. Substantive and formal theory

Theory overall represents a combination of research objects, constructs and interactions between these objects and constructs. Interactions portray a key essence of a theory. Within the pure scientific philosophical stance such interactions represent verified hypotheses. The other side of the philosophical continuum, interpretivism, views theory as *"logically interconnected sets of propositions"* (Merton 1968, p. 39). Sutton and Staw (1995) integrate these different views to emphasise that irrespective of the philosophical orientations theory should have an overarching meaning for all researchers. In fact, Sutton and Sraw (1995) argue that theory is not a set of hypotheses or propositions, a set of constructs, raw data, references to existing literature or an illustrative diagram. They suggest:

> *"Theory is the answer to queries of why. Theory is about the connections among phenomena, a story about why acts, events, structure, and thoughts occur. Theory emphasises the nature of casual relationships, identifying what comes first as well as the timing of such events."*
>
> (Sutton and Staw 1995, p. 378).

However, a set of hypotheses or propositions, a set of constructs, raw data, references to existing literature or an illustrative diagram represent means of finding answers to questions why.

The author, in particular, favoured Sutton and Sraw's (1995) statement regarding the theory being strong if it relates to and explains 'microprocesses' (specific emic settings) around the phenomena and becomes a predictive mechanism for managing these 'microprosesses'. Essentially what Sutton and Sraw (1995) refer to is a grounded theory, an abstraction of relationships and key phenomena which emerged directly from the empirical data (Glaser and Strauss 1967).

Within the context of the chosen research strategy Strauss and Corbin (1990) argue that based on the level of abstraction and the breath of contextual boundaries theories can be divided into two types, namely, substantive and formal. Substantive theories are directly related to the empirical data emerged from a particular setting (in line with Sutton and Staw's (1995) definition of theory); hence, its boundaries are recognised and acknowledged. An example of a substantive theory is the framework explaining IT professional-business relationships (Day 2007). Formal theories, on the other hand, explain generic phenomena outside of a specific setting implying the applicability to a broad range of disciplines and contexts. An example of such theory can be found in the Crook and Kumar (1998) study, which developed a formal grounded theory of electronic data interchange use by collecting data across various distinct industries. Overall, a formal theory represents a collection of substantive theories. Hence, no formal theory can emerge unless substantive theories are considered and examined. Consequently, only a substantive theory can meet the third requirement of the strong theory formulated by Sutton and Staw (1995, p. 378) – *"delight"*, because substantive theories open up the opportunities to explore further angles around the phenomena, examine their applicability to other emic settings and to seek formal theoretical conclusions.

This study built a substantive theory as (1) the specific contextual setting was pre-determined, creative service SMEs delivering marketing, advertising, digital architecture and digital design services, and (2) the theory emerged from the empirical data which explains the role of mobile technology capabilities in that particular setting.

Hence, the aim to upgrade the substantive theory to a formal theory level by examining other types of firms in terms of the industry or size of the organisations is outside of this study's scope.

4.4.4.2. Quality of a theory

In order to see how strong this study's theory is in explaining and predicting the role of mobile technology capabilities in SIPs of creative service SMEs, and potentially 'delighting' the scholarly world in seeking verification and generalisation, in this subsection the author identified the criteria used to evaluate the final substantive theory.

Qualitative studies are generally evaluated against authenticity and transferability of the research findings (Denzin and Lincoln 2011). Validity (trustworthiness and credibility) and reliability (transferability and generalisation), the most quoted criteria for theory and research evaluation, help to justify the robustness of the research process, compliance with research rules and to ensure the 'goodness' of the theory (Creswell 2014; Denzin and Lincoln 2011).

Validity is seen as being more critical to qualitative studies where researchers deal with *"rich, deep and real data"* (Deshpande 1983, p. 103). Validity focuses on theory accuracy and robustness. This can be achieved by following a chain of evidence which can explain the evolution and transformation of the research objects, events and meanings. Hence, the valid theory is considered to be the one, which presents a rich detailed examination of the research outcomes.

Credibility and trustworthiness are particularly critical when it comes to the grounded theory qualitative method. To increase the validity of results, in addition to following rigorous steps in data analysis, the author triangulated data sources. Different data sources (read further in the subsection 4.5.2.1.) enable one to verify some of the ideas articulated by the interviewees during interview sessions. For instance, interviewee 14 decided to share some documentation on mobile application development when discussing the role of mobile technology deployment in SIPs. Although additional sources helped in conceptualising the results, these sources are not explicitly listed when discussing results as the theory was grounded from the interviewee data. Moreover, one member-checking event occurred during the analytical stage. This

increases the credibility of results, which is particularly critical to the abstraction stage where what the author sees in the data needs to resonate with others reading or analysing the data. Dr Day, in May 2012, consulted the researcher on the grounded theory analysis and also looked through the initial open and axial coding stages of a few interviews.

The reliability of data looks at aspects of generalisation and objectivity (Despahde 1983), since reliability is seen as being more critical to quantitative studies. As stated previously, generalisation is not the intention of the researcher; the main aim is to develop a substantive theory by adopting a qualitative approach. Reliability in qualitative studies does not have the same meaning as in quantitative studies (Creswell 2014) – qualitative reliability implies consistency in the way the researcher adopts, for instance, the research strategy and the way previous studies adopted a similar method in their research. Reliability refers to the rigorous and transparent process of the theory development, including both data collection and most importantly data analysis. Hence, the detailed documentation of analytical processes is a way of ensuring theory cohesion.

One theory can be very accurate in explaining the phenomena but not reliable due to detailed understanding of a particular emic setting. However, Corbin and Strauss (1990) argue that grounded theory's generalisation can be evaluated against the depth and breadth of the theoretical categories. Abstract level categories maximise the chances for the substantive theory to be verified and form a formal grounded theory.

In relation to the grounded theory strategy in particular, because of the blended use of the grounded theory strategy the author adopted the mixture of the criteria for evaluating the quality of this study's theory. Following the blended application of the grounded theory research strategy for this study (subsection 4.4.3.), evaluation criteria for this study represent a blend of evaluation criteria identified by the classical version (Glaser and Strauss 1967) and the evolved version (Strauss and Corbin 1990):

- Density or plausibility, meaning that the theory is abstract but represents similar shared beliefs among respondents by offering a credible explanation of the phenomena (Glaser and Strauss 1967). Corbin and Strauss (2009, p. 302) refer to the plausible theory as the one *"that blends conceptualisation with sufficient*

descriptive detail to allow the reader to reach his or her own conclusions about the data".

- Scope of the theory, meaning the comprehensiveness of the substantive theory. In Glaser and Strauss's (1967, p. 3) words, scope of the theory implies clarity of the categories so that *"crucial ones can be verified in present and future research"*. Corbin and Strauss (2009, p. 305) use the word 'applicability' to indicate that the scope of theory is extended to offering new insights and explanations.
- Workability, which in Glaser and Strauss' (1967, p. 62)) words mean ability *"to explain what happened, predict what will happen and interpret what is happening in the area of substantive or formal inquiry… meaningfully relevant to and be able to explain the behaviour under study"*.
- Fit, which Glaser and Strauss (1967, p. 3) explain as follows, *"the categories must be readily (not forcibly) applicable to and indicated by the data under study"*; hence, the data is believable and trustworthy, *"resonates with reader's and participants' life experiences"* (Corbin and Strauss 2009, p. 302). The problem of forcing the development of the theory is critical and challenging, which concerns both theoretical sensitivity (or 'too much' of theoretical sensitivity) and the actual data collection and analysis (Corbin and Strauss 2009). In this study several techniques assisted in dealing with the 'force' issue. For instance, the author's role during the data collection process was to introduce and discuss key themes (4.5.2.2.), in order to prompt the direction of discussion, where necessary (for instance, to avoid a detailed discussion on the technical features of mobile technology or programming aspects of mobile technology applications). Moreover, during each interview session, the researcher was conscious of complex questions or double-meaning questions, so one aspect was discussed at a time. This helped the interviewees to understand the questions and also eased the data analysis process. In addition, the 'Let people talk' (Berg 2006) rule was applied by letting the interviewees tell stories and reflect on their experiences of using mobile technology rather than providing clear, one-statement answers; whilst the author took an independent scientist stance of dualist.

- Contextualisation of the theory and its elements: *"Findings devoid of context are incomplete"* (Corbin and Strauss 2009, p. 306).
- Variation, by which Corbin and Strauss (2009, p. 306) mean inclusion of *"examples that don't fit the pattern or show differences along certain dimensions or properties"*. By including conflicting/divergent cases gathered from three interviewees (I2, I15, I26), the author built a more complete explanation around contextually bound phenomena.
- Reproducibility by which Corbin and Strauss (2009) mean possibility to integrate the substantive theory into other theories. Having said that, Glaser and Strauss (1967, p. 4) make an interesting statement in their original work on grounded theory, *"theory based on data can usually not be completely refuted by more data or replaced by another theory. Since it is too intimately linked to data, it is destined to last despite its inevitable modification and reformulations"*. Hence, maintaining plausibility and fit are the main criteria in building a good theory.

Chapter 7 'Conclusions' demonstrates how these criteria was applied to evaluate the substantive theory developed in this study (section 7.2).

4.5. Implementation of the Research Strategy – Data Collection

Since the research strategy has been fully identified and explained in terms of guidelines for its implementation, this section illustrates how the acquiring primary data phase was planned (the sampling design) and implemented in practice.

4.5.1. Sampling design and implementation

4.5.1.1. Units of analysis and collection

Before entering the research setting the appropriate unit of analysis has to be determined (Benbasat et al. 1987; Pentland Feldman 2005). Common units of analysis within the strategic management and information systems research domains are individuals, distinct organisational entities and groups (departments), or organisations as a whole. However, activities, processes and routines are predominantly studied when a capability approach is the main theoretical focus of the investigation (Pentland Feldman 2005). Research aim and objectives quite often aid in determining the unit of analysis.

Following this statement, in this study the main unit of analysis is the process of mobile technology deployment where mobile technology capabilities reside. However, the process cannot be studied outside of the organisational, business context. Moreover, given the contemporary nature of the objects (mobile technology) meanings and experiences may vary from one sector to another and from organisation to organisation.

Hence, a creative service firm is the main unit of analysis in this study meaning that research deliverables are to be constrained by the contextual setting chosen for this study; creative service firms that are pioneers in deploying mobile technology. Moreover, as the overview of the contextual setting for this study (see Chapter 1, section 1.3) and the review of literature (Chapters 2 and 3) suggest the industry and the size of the organisation may have an impact on the role of mobile technology capabilities on SIPs. The author concludes that the research objects have to be explored within multiple organisations but within a single industry represented by a homogeneous group of firms. The homogeneity of the sample is characterised by:

- The nature of services they deliver - marketing, advertising, digital architecture and digital design services (see Chapter 1, section 1.3.);
- The size of a firm (the category of micro, small and medium-sized enterprises (SMEs), enterprises which employ *"fewer than 250 person"* (European Commission 2005, p. 14) and which, based on the Bolton Committee' economical definition, are "*managed by owners and co-owners in a personalised way and not through the medium of a formalized management structure; and are independent, in the sense of not forming part of a larger enterprise"* (Abbrey et al. 2015, p. 40; Deakins and Freele, 2009, p.30);
- The geographical area - this is a single-country study focusing on the UK.

Moreover, research deliverables in this study are to be constrained by the unit of collection - individuals, their role within the organisation and knowledge of the research objects. At the sample design stage the author decided to include individuals who are key decision-makers in respect to mobile technology deployment, knowledgeable about mobile technology deployment on both strategic and operational levels and about SIPs in their firms. A detailed profile of the sample (interviewees and firms they represent) is provided further in this chapter, subsection 4.5.1.4.

Both the unit of analysis and the unit of collection represent factors, which can substantiate and position the discovered theory within certain contextual boundaries.

4.5.1.2. Sampling methods

Generally, qualitative studies tend to select small and non-random samples to investigate the aspects under question (Berg 2006; Creswell 2013). According to Flick (2009), sampling needs to be considered carefully in order to develop a comprehensive understanding of the research topic by selecting relevant units of analysis. Hence, the problem of generalisation is minimised.

Sampling in this study involved two phases. Firstly, the case sampling phase implies the selection of individuals to be interviewed. Table 6 demonstrates that two types of sampling techniques were used in this respect. The purposive sampling technique was aimed at interviewing individuals who represent the chosen context of this study (Chapter 1), namely creative service SMEs; in particular, enterprises delivering marketing, advertising, digital architecture and digital design services were the primary target. Moreover, convenience sampling was used to focus geographically on selecting creative service SMEs delivering marketing, advertising, digital architecture and digital design services. This is a single-country study focusing on the UK. Although it is not limited to any specific region within the UK, the researcher started to look at geographically close regions, to minimise travelling costs and maximise response rates, i.e. potential interviewees were positive about their involvement when seeing that this was for local university. Hence, the south-west of England was the first region to consider for convenience reasons, but also because the area is claimed to be "*the UK's hub for creativity and digital innovation*" (LLP 2012).

Table 6. Case sampling phase: design

Sampling type	Aim	Sampling decision
Purposive	Research areas	Creative service sector: enterprises delivering marketing, advertising, digital architecture and digital design services that apply technological advancements externally and internally.
Convenience	Geographical demarcation (across the UK)	1. Dorset 2. Hampshire 3. Sussex 4. London 5. West Midlands

Using secondary sources and publicly available directories for creative service industries, the researcher constructed a database of 75 creative service SMEs delivering marketing, advertising, digital architecture and digital design services. The database contains general information on each firm, such as an overview of business services, employee numbers and contact information. Further on, all 75 creative service SMEs were contacted via email or telephone and asked if their organisations deploy mobile technology for internal and product/service development purposes. Thirty-one individuals agreed to be interviewed. Eventually only 28 interviewees positively responded about the deployment of mobile technology in their daily operational activities as well as for strategic business purposes. Three interviewees negatively perceived the role of mobile technology in their business setting and saw no value in the deployment of such technology. Nevertheless, these negative views (divergent cases in Yin's (2014) words) were included in the analysis, to contrast and compare the discussed issues, where necessary, with the aim of enriching the emerging theory and increasing its credibility and validity (Corbin and Strauss 2009).

Sample size was not definitive, and the researcher collected data until reaching theoretical saturation (another critical element in all grounded theory methods). Having said that, no studies state what sample size is the most appropriate for grounded theory

research. Goulding (1998, p. 54) specifies, "*A sample size of twelve is a minimum for any grounded theory study.*" As a matter of fact, the researcher reached theoretical saturation after interviewing 24 individuals. Nevertheless, the decision to proceed was justified by the intention to clarify some aspects further; therefore, using a theoretical sampling method. Theoretical sampling guides the researcher in exploring further aspects and elements of the research objects by collecting additional data which verifies and extends ideas and conceptualisation discovered in preceding cases (Glaser and Strauss 1967). Theoretical sampling interchanges with purposive sampling, whereby sampling or the choice of interviewees progresses based on the relevance of an individual to discussing particular aspects. Hence, the researcher, when approaching potential interviewees, asked them to acquaint her with individuals who were responsible for mobile technology deployment in the firm, or were at least familiar with the process. Cutcliffe (2000, p. 1477) agrees that "*informants must be knowledgeable about the topic and experts by their virtue of their involvement in specific life events and/or associations.*" Moreover, through theoretical sampling, different themes can emerge. This was also the case with this study, where more focused questions in relation to mobile technology deployment were asked further on. For instance, questions on organisational culture were only asked from interview 7 onwards, because interviewees 1, 3, 4-6 specifically emphasised the role of organisational culture in the successful deployment of mobile technology.

4.5.1.3. Ethical considerations

Ethical considerations are of great importance for any qualitative research, particularly while collecting data, because it involves human participation (Flick 2009; Grix 2010). All measures to ensure compliance with ethical principles need to be in place before a researcher can proceed with analysing and reporting data (Grix 2010). Ethical principles are common moral aspects that involve working with people and gathering information from them (Denscombe 2010). Key ethical principles to be maintained by any researcher who obtains data from human participants are confidentiality, anonymity, legality, professionalism and privacy (Denscombe 2010; Grix 2010). All these issues represent principal aspects which the researcher considers seriously while conducting data collection and analysis.

To comply with all the above-listed principles, the researcher obtained explicit permission from the interviewees to participate in this research, by using a consent form (Appendix F). An information sheet about the research (Appendix G) was also provided outlining the key purpose of this research and explaining the rights and ethical aspects involved by particularly stressing that all responses would be treated confidentially. Hence, no participants' names are disclosed in this thesis (interviewees are given specific identification code, see next subsection 4.5.1.4.), while the names of any clients mentioned during the interviews are revealed but abbreviated. Moreover, the consent form as well the information sheet highlighted that this study would not cause any risk or harm to the participants and emphasised the potential contribution of this research. Flick (2009) stresses that not contributing to existing research by duplicating and not providing original ideas is also considered an unethical practice in the research community.

Institutional ethical policy was consulted and used as a reference point for the primary research. This study received ethics clearance through the Business School Research Committee at Bournemouth University. Finally, the interviews were transcribed accurately and interpretations of results were grounded in the data itself rather than by any personal judgments of the researcher.

4.5.1.4. Profile of the sample

All 31 firms, representing the UK creative service SMEs that deliver marketing, advertising, digital architecture and digital design services, were based in London (two firms), Hampshire (four firms), Sussex (two firms), Somerset (one firm), West Midlands (one firm) and Dorset (18 firms) (Figure 9).

Figure 9. Geographical distribution of cases

An analysis of the interview transcripts helped in building a comprehensive and extended data profile of all the interviewees and their firms. Detailed information can be found further, in Table 7.

Table 7. Detailed Profiling Information on the Sample

Firm ID	Interviewee		Firm Characteristics								
	ID	Role/position within the firm	Ownership	Founded	Number of employees	Process Orientation	Services			Location	Mobile technol-ogy deploy-ment
							Print Design	Digital Design and Digital Architecture	Marketing and Advertising Consultancy		
Firm 1	[I1]	Strategic manager (digital)	Privately held	2003	11-50	Project-based	Print advertising and public relations, direct marketing	Digital content, online marketing	Strategic marketing, branding	Bournemouth Dorset	P*
Firm 2	[I2]	Business owner / managing director [Divergent case]	Privately held	2008	1-10	Project-based	Print promotion design	E-commerce, Web-design, social media planning, Bluetooth technology leasing	Branding, strategic planning	Bournemouth Dorset	N**
Firm 3	[I3]	Partner / managing director	Partnership	1985	51-200	Project-based	Not present	Digital content, cloud-computing services	Integrative marketing solutions, branding, strategic marketing	Bournemouth Dorset	P
Firm 4	[I4]	Business owner / creative	Privately held	2000	1-10	Project-based	Print advertising, exhibition	Digital content, Web-design, search	Branding, market research	Bournemouth Dorset	P

		director					graphics	engine optimisation			
Firm 5	[I5]	Business owner/ freelancer	Privately held	2008	1-10	Project-based	Print advertising	Web-design and architecture, digital content	Branding, market research, product design	London	P
Firm 6	[I6]	Marketing director	Privately held	2002	11-50	Project-based	Large format print advertising	Interactive digital advertising	Not present	Bournemouth Dorset	P
Firm 7	[I7]	Business owner / creative director	Privately held	2000	1-10	Project-based	Design and print for literature, print advertising	Social media optimisation, online marketing	Marketing communica-tions planning, branding, business workshops	Wimborne Dorset	P
Firm 8	[I8]	Business owner/ freelancer	Privately held	1991	1-10	Project-based	Not present	Not present	Branding, strategic marketing	Bournemouth Dorset	P
Firm 9	[I9]	Partner / managing director	Partnership	2000	1-10	Project-based	Print advertising, direct marketing, point-of-sale displays	Web-design and architecture	Branding	Bournemouth Dorset	P
Firm 10	[I10]	Business development manager	Privately held (family-owned)	1983	1-10	Project-based	Print advertising, public relations	Web-design, search engine optimisation, pay-per-click advertising	Branding	Southampton Hampshire	P
Firm 11	[I11]	Partner / marketing director	Partnership (family-owned)	2010	1-10	Project-based	Print advertising	Web-design and architecture	Business workshops, creative	Christchurch Dorset	P

									clinics, branding, strategic marketing		
Firm 12	[I12]	New media director	Privately held	1979	51-200	Project-based	Public relations	Mobile applications development, branded entertainment digital content, social media optimisation, Web-design	Strategy analytics	Southampton Hampshire	P
Firm 13	[I13]	Business owner / managing director	Privately held	2008	1-10	Project-based	Public relations	Web-design, digital content management, multimedia creation	Strategic planning, branding, media buying services	Bournemouth Dorset	P
Firm 14	[I14]	Strategic planner	Public company	2001	51-200	Project-based	Not present	Web-design, mobile applications development, digital content, social media optimisation, online game development, online public relations, cross-platform commissions	Digital marketing strategy planning, branding, online 'seeding'	London	P
Firm 15	[I15]	Partner / managing	Partnership	1995	1-10	Project-based	Print advertising	E-marketing	Branding, business	Wimborne Dorset	N

		director [Divergent case]							strategy		
Firm 16	[I16]	Strategic director	Public company	1986	51-200	Project-based	Print advertising, public relations	Web-design, mobile applications development, digital content, social media optimisation, online public relations	Branding, digital marketing strategy planning, market research	London	P
Firm 17	[I17]	Partner / creative director	Partnership	2010	1-10	Project-based	Print advertising	Web-design, online marketing, social media optimisation	Branding	Brighton Sussex	P
Firm 18	[I18]	Digital strategist	Privately held	1993	51-200	Project-based	Print advertising	Digital interactive content design	Branding, marketing communica-tions planning	Wolverhampton West Midlands	P
Firm 19	[I19]	Business owner / managing director	Privately held	1989	11-50	Project-based	Not present	Digital content, search engine optimisation, pay-per-click advertising	Strategic marketing, experiential marketing, branding, project management	Southampton Hampshire	P
Firm 20	[I20]	Partner / managing director	Partnership	2003	1-10	Project-based	Print advertising, and direct marketing	Online marketing	Branding, corporate culture management, strategic	Dorchester Dorset	P

									marketing		
Firm 21	[I21]	Strategic director	Privately held	1978	11-50	Project-based	Not present	Web-design, digital content development and management, cross-platform commissions, social media optimisation	Digital marketing strategy planning, branding	Ringwood Hampshire	P
Firm 22	[I22]	Partner / managing director	Partnership	2009	1-10	Project-based	Design for print advertising	Web-design and architecture	Branding	Bournemouth Dorset	P
Firm 23	[I23]	Partner / managing director	Partnership	2007	11-50	Project-based	Public relations, print advertising	Web-design and architecture	Branding, strategic marketing	Bournemouth Dorset	P
Firm 24	[I24]	Account director	Privately held	1973	11-50	Project-based	Print advertising, public relations, direct marketing	Email marketing, banner advertising, social media management	Branding, strategic marketing	Christchurch Dorset	P
Firm 25	[I25]	Business owner / freelancer	Privately held	2000	1-10	Project-based	Not present	Viral coupon marketing, Web-design, search engine optimisation, cross-platform commissions	Not present	Dorchester Dorset	P
Firm 26	[I26]	Business owner /	Privately held	2004	1-10	Project-based	Print advertising	Web-design and	Not present	Swanage Dorset	N

		freelancer [Divergent case]						architecture			
Firm 27	[I27]	Business owner / managing director	Privately held	2001	1-10	Project-based	Print advertising	Digital content, Web-design, social media optimisation, cross-platform commissions	Branding, strategic marketing	Poole Dorset	P
Firm 28	[I28]	Partner / creative director	Partnership	2000	11-50	Project-based	Not present	Web-design, mobile applications development, digital content design and management, cross-platform commissions	Digital marketing strategy planning	Poole Dorset	P
Firm 29	[I29]	Business owner / managing director	Privately held	2007	11-50	Project-based	Print advertising	Web-design, digital marketing, interactive media content development, software development	Branding	Bristol Somerset	P
Firm 30	[I30]	Business owner / managing director	Privately held	2005	1-10	Project-based	Not present	Web-design, e-commerce, online marketing and public relations,	Digital marketing strategy planning	Wimborne Dorset	P

								social media optimisation			
Firm 31	[I31]	Business owner / creative director	Privately held	1990	11-50	Project-based	Print advertising, public relations	Web-design and architecture	Branding, strategic marketing	Brighton Sussex	P

[*] P means Positive views about the value of mobile technology and its deployment in the business context

[**] N means Negative views about the value of mobile technology and its deployment in the business context

In relation to the firms, all 31 firms are considered to be small and medium-sized enterprises (SMEs) based on number of employees/headcount – less than 250 (European Commission 2005, p. 14) or less than 200 (based on the Bolton Committee' statistical definition (Abbrey et al. 2015, p. 40; Deakins and Freele, 2009, p.30)). Micro-entities prevail in this study sample, as 17 firms employ up to ten employees only (see aggregated profiling information on participating firms in Table 8).

Table 8. Aggregated data on the interviewees' firms

Characteristics	Dimensions	Number of firms
Ownership	Privately held	20
	Partnership	9
	Public company	2
Number of employees	1-10	17
	11 -50	9
	51-200	5
Business context	B2B	31
Process orientation	Project-based	31
Founding period	Before 2000	11
	After 2000	20
Mobile technology deployment	Negative	3
	Positive	28

Nine firms (firms 1, 6, 19, 21, 23, 24, 28, 29, and 31) are considered to be small, with up to 50 employees, and five firms (firm 3, 12, 14, 16, and 18) are medium-sized and operate with up to 200 employees. The participating firms offer their business clients a range of services, including traditional print advertising and marketing design; marketing and advertising consultancy solutions such as market research, branding, strategic marketing; and finally digital design and digital architecture services. The

nature of the processes in all firms is project-based, where each new project is assigned to a new account manager, depending on the client's objectives, for each task.

In relation to the interviewees, to ensure interviewees' personal information and response confidentiality, no respondent names are disclosed in this thesis. Interviewees are given a specific identification code with the letter 'I', meaning 'interviewee', followed by the order number of the interview (Table 7).

Most interviewees own their businesses independently (13 out of 31 interviewees, see Tables 7 and 8), nine out of 31 interviewees are part-owners of their firms (I3, I9, I11, I15, I17, I20, I22, I23, and I28). Hence, 22 firms from the sample fit the Bolton Committee's economical definition of SMEs (Abbrey et al. 2015, p. 40; Deakins and Freele, 2009, p.30) whereby SMEs are managed by owners or part-owners in a personalised way and not through the medium of a formalised management structure; and are independent, in the sense of not being part of a large enterprise.

From the owners and part-owners interviewed in this study, the majority of the interviewees are responsible for managing the whole business (12 out of 22 owners and part-owners), four independent business owners are freelancers (I5, I8, I25 and I26), five interviewees have responsibilities of Creative Director (I4, I7, I17, I28, and I21) and one interviewee I11 calls herself a Marketing Director specifying that her husband/partner manages the business overall. I11 is not the only family-owned business in the sample. Firm 10 is also a family-owned business where interviewee 10, son of the business owners, is responsible for managing business development. In addition, a few other interviewees are responsible for a particular area within a firm devoted to understanding technological advancements. The author interviewed a marketing director in one of the firms (firm 6), an account manager (I24), three new media/digital directors (I1, I12, and I18) and three strategic directors (I14, I16, and I21). The majority of these interviewees who are not independent or part-owners, apart from I10, work in either small-sized enterprises (I1, I6, and I21) or medium-sized enterprises (I12, I14, I16 and I18). All 31 interviewees represent a homogeneous group based on the fact that they are all key decision-makers in respect to mobile technology deployment in their firms; they are all knowledgeable about mobile technology deployment on both strategic and operational levels and about SIPs in their firms

As stated before (subsection 4.2.1.2.), three divergent cases were included in the analysis – three interviewees (business owner and managing director in firm 2, part-owner and managing director in form 15 and business owner / freelancer in form 26) negatively perceived the role of mobile technology in their business setting and saw no value in the deployment of such technology. These negative views were included to contrast and compare the discussed issues, where necessary, with the aim of enriching the emerging theory.

4.5.2. Data collection methods

According to Creswell (2014), a diverse range of techniques for collecting qualitative data is available, such as interviewing, observation, research diaries and focus groups. Based on the research strategy adopted for this study and the research objectives and research deliverables of this study (section 4.2.), the interviewing technique is the most appropriate data collection method for this study. Nestling under the qualitative techniques umbrella, interviewing creates fruitful and deep insights that help to achieve exploratory aims and is a fairly flexible method of data collection since questions can be adjusted as the data collection proceeds (Creswell 2014). Interviewing is the most common technique employed to gather data as part of the grounded theory research method (Creswell 2013).

Qualitative interviewing is assumed to be the most popular type of interviewing method in advertising and product studies (Blankenship et al. 1949; Grix 2004). Interviewing involves an in-depth conversation and discussion with a particular purpose (King and Horrocks 2010). Hence, interviews enable the closest degree of personal contact with interviewees and the opportunity to question them regarding the point of inquiry, and finally they require a relatively small number of participants (Blankenship et al. 1949).

The purpose of interviewing in this study is to gather information about mobile technology deployment in a business setting in order to discover and conceptualise mobile technology capabilities and to investigate their role in creative service SMEs' innovation practices. Berg (2006) identifies three types of interviews, the selection of which impacts on topics and answers. A formally structured interview design with standard questions is in the form of a quantitative questionnaire but in a qualitative research setting (Berg 2006). Conversely, unstructured interviews are open, flexible and

informal. A third type of interview, semi-structured, equips the researcher with a set of questions that can direct the conversation without restraining it (Grix 2010); consequently, "*unexpected lines of enquiry during the interview*" (Grix 2010, p. 127) still occur in semi-structured interview sessions. From amongst a broad choice of interviewing techniques – structured, semi-structured, unstructured and group – semi-structured interviews are regarded as the most effective interviewing method of data collection for this study because they enable a detailed and systematic investigation of the field by retaining a certain degree of relevance and structure, based on pre-determined interview scenario (see the next subsection).

In addition, face-to-face individual interviews as opposed to group interviews guarantee a certain degree of structure and validity/reliability as they enable data comparison among individuals interviewed (Veal 1997). Given the above listed arguments and that semi-structured interviews are seen as the most effective way of investigating people's reflections on experiences (Allan and Curtis 2002), it was appropriate for this study to employ a face-to-face, semi-structured but flexible elite interviewing method of data collection.

According to Silverman (2000) using a single method of data collection limits complexity and prevents chaos when it comes to analysing various sources of data. On the contrary, the majority of scholars (Brewerton and Millward 2001; Holstein and Gubrium 1995; Grix 2010) argue that triangulation in the data collection process, which implies the use of different sources of data, improves the reliability of findings and is a sensible technique to use, in order to enrich understanding about the phenomenon by ensuring "*a more balanced approach to [the] object of study*" and by shedding "*more light on it.*" Grix (2010, p. 126). Hence, in addition to interviewing as the main data collection method, this study collects several sources of data comprising both primary and secondary sources. The next subsection briefly outlines the nature of these sources.

4.5.2.1. Data sources

Table 9 lists all data sources collected and used to develop the theory in this thesis.

Table 9. Overview of data sources collected and used for analysis

Source of Data	Nature of Data Collected	Time/Frequency of Data Collection
Interviews	Individual accounts discussing mobile technology, its deployment and impact on service innovation practices: Face-to-face in-person interviews; Web-based interviews Follow-up email communication	3 December 2010 – 19 October 2011 February 2012 – August 2012
Interviewee supporting evidences	Images, private documents such as PowerPoint slides and PDF documentation reflecting firms' policies and project management structure	3 December 2010 – 19 October 2011
Internet materials	Firms' websites and social networking sites (LinkedIn, Twitter, and Facebook)	1 October 2010 – March 2012

Initially, the author conducted a series of qualitative interviews to question individuals directly regarding the key research objectives (section 4.2.). The interviewing period lasted for nearly a year and resulted in 31 in-depth interviews with individuals representing 31 firms (the detailed profile is presented in the earlier section, 4.5.1.4.). Each interview lasted between 40 minutes and one-and-a-half hours. Face-to-face interviews took place on firms' premises, the university premises and other social spots such as coffee shops. The establishment of a good rapport through prior email communication and telephone conversations was particularly critical for the author. Hence, the author applied the so-called 'feminist approach' to interviewing, whereby a rapport is a crucial element to a successful interview (Berg 2006).

Additionally, Web-based interviews via Skype (synchronous environment, a real-time chat room and communication through technological devices) were conducted. Web-

interviewing is an interesting addition to data collection. On reflection, the author agrees with Bampton and Cowton (2002), in that Web-based interviews allow respondents to think about questions and develop a more comprehensive conversation around the phenomenon. Irrespective of the interviewing approach, all interview sessions were audio-recorded, adding up to 40 hours of conversations altogether. All the interviews were transcribed, and the overall data were counted at 449 pages (201,328 words) of transcribed text (Appendix D).

Along with in-depth interviews, the author maintained further email contact with the interviewees throughout the analytical stage. Emails enabled the immediate clarification of questionable elements from the initial set of interviews (Selwyn and Robson 1998). Selwyn and Robson (1998) state that electronic data collection techniques can be used in relation to a specifically narrow group of participants. Hence, the author used emails to clarify certain points after conducting the initial in-depth interviewing process.

Fundamental data sources are generated from interview transcripts. However, it is essential to mention that in addition to the data collection process, some respondents provided the author with 'soft' data such as images (an example is provided in Chapter 6, subsection 6.3.1.), presentation slides and online videos (secondary sources), as well as technical documentation including project management guidelines, internal reports on mobile technology-related projects and firms' credential reports. In the interviewees' opinions, these additional data sources reflected their thoughts on a subject.

In addition to the interview transcripts, data available on the firms' websites and social networking sites, such as LinkedIn, Twitter and Facebook, enhanced information on projects and processes that involve mobile technology deployment. The combination of all sources represents an overall empirical dataset, used to investigate mobile technology deployment, with the aim of conceptualising mobile technology capabilities and exploring whether, and to what extent, mobile technology capabilities stimulate and facilitate service innovation practices within the context of creative service SMEs.

4.5.2.2. Interview topics

A key requirement for semi-structured interviewing is to develop a set of questions or to select topics for discussion with the interviewee. It is worthwhile mentioning that the author in this study typically followed a predetermined order of topics, but in some

cases (interviews 2, 8, 17 and 26) topics were discussed with the interviewee from a different perspective. The author pre-tested interview questions four times with academic colleagues, specifically those teaching marketing subjects, to ensure that the words used would be familiar to business practitioners working in firms, which deliver marketing, advertising, digital architecture and digital design services, and to also ensure that the questions would not be too complex. In addition, one elite interview (interview 1) was also counted within the pilot test, though the data obtained from this interview were used in the analysis stage. Throughout the data collection, the author reflected on obtained information to make sure that all intended information was gathered. Follow-up interviews helped to deal with some missing or ambiguous issues.

As this study focuses on mobile technology deployment, as well as SIPs, a number of themes were derived from the literature (Chen and Tsou 2007; Chen and Tsou 2012). Moreover, in order to define and conceptualise mobile technology capabilities, the author adopted and modified questions used in Dutta et al.'s (2003) paper, which studies pricing process as a capability. Table 10 overleaf presents the interview scenario which predetermined the key research themes and guided the exploratory process. The author used this scenario to stimulate and direct interviews but remained open to the discussion of any emergent issues.

Table 10. Interview Scenario

Part A: Background information on interviewee and firm	
Q1*	Could you please tell me a little bit about yourself?
Q2	Can you describe your role in your firm?
Q3	Could you please tell me a little bit about your firm?
Part B: Mobile technology: nature	
Q1	How would you define the term 'mobile technology'?
Q2	Do you consider mobile technology different from stationary and fixed network information and communication technologies? **
Part C: Mobile technology deployment: nature and involvement	
Q1	Has your firm ever been involved in applying and working with mobile technology? **
Q2	How is mobile technology deployed in your firm?
Q3	Why did your firm decide to employ mobile technology?
Q4	How is the process of mobile technology deployment organised in your firm? **
Q5	Did your firm require a new set of skills for the deployment of mobile technology?
Q6	What managerial processes does your firm use for processes and projects where the employment of mobile technology takes place?
Q7	Does your firm consider mobile technology a strategic resource or an operational tool? **
Q8	What are the implications of mobile technology deployment for your firm's internal processes and performance?
Q9	What are the implications of mobile technology deployment for your firm's experience in serving clients?

Notes: *- Q stands for Question; ** – Further elaboration depending on the interviewee's response.

Table 10. Interview Scenario (continued)

Part D: Service innovation practices: nature, experience and role of mobile technology deployment in SIPs	
Q1	How would you define the term 'service innovation'?
Q2	Is your firm involved in service innovation practices? If yes, what service innovation practices is your firm involved in?
Q3	In general, do you think mobile technology deployment affects service innovation practices? If yes, in what ways does it affect service innovation practices?
Q4	Do you think employing mobile technology has had an impact on service innovation practices in your firm? **
Set of questions on PCSIPs (based on Chen and Tsou 2007, 2011)	For the past few years, has your firm introduced new practices due to mobile technology deployment in: - Internal administration and operations; - Service development processes; - Customer information retrieval and inquiry processes; - Consulting customers; - Serving customers; - Promotion processes; - Selling services; - Providing post-sales services?
Set of questions on PDSIPs (based on Chen and Tsou 2007, 2011)	For the past few years, has your firm introduced new practices due to mobile technology deployment in: - Improved existing service offerings; - Repackaged existing service offerings; - Extended service offerings; - Created new lines of service offerings?

Notes: *- Q stands for Question; ** – Further elaboration depending on the interviewee's response.

As evident from Table 10, open-ended interviews primarily covered aspects related to strategic business directions and mobile technology deployment within both operational daily routines and on the more strategic level of engagement. In particular, the author aimed at developing rapport, by asking general questions first about the professional backgrounds of the interviewees and then about their firm (part A, Table 7). Afterwards, key research themes were discussed, starting with mobile technology and its nature (part B, Table 7), followed by the mobile technology deployment process, to define and conceptualise mobile technology capabilities (part C, Table 7) and ending with questions on SIPs and their connection with mobile technology deployment (part D, Table 7).

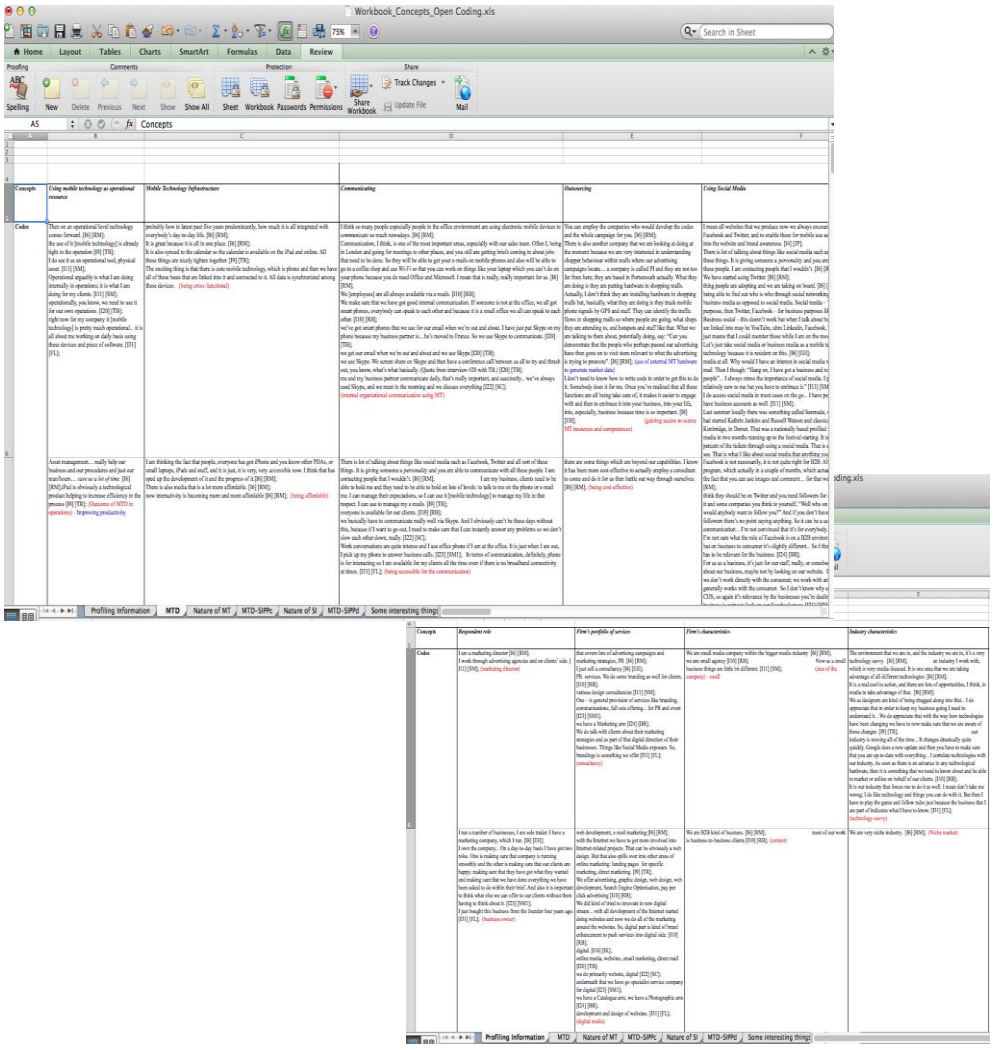
4.6. Implementation of the Research Strategy – Data Analysis

Primary data, mainly interview transcripts, were exposed to data reduction and data structuring through three-stage coding procedures. Data reduction is a foundation of theory grounding, where text is a material for analytical elaboration (Corbin and Strauss 2008). The first stage focused specifically on the determination of codes in the form of a word, a sentence or a paragraph, which illustrates the relevance to research topics. These units of information were classified into 'concepts' that were eventually analysed and cross-compared across all interviews and based on similarities and differences between the interviewees' claims grouped together into abstract groups called 'categories'. Concepts and categories are the building blocks of the substantive theory (Berg 2006). The second and third stages of the coding process shape the theory by, firstly, understanding each concept and category, and, secondly, determining and explaining interactions and relationships between categories and concepts. This section discusses how data analysis was implemented.

4.6.1. Data management

Given the large amount of empirical data (subsection 4.5.2.1.) it is critical to manage the process of data coding effectively. Initially, the author created the self-created data display instrument, a codebook created using a Microsoft Excel that contains detailed extracts for individual concepts (see snapshot of the codebook below, Figure 10).

Figure 10. Screenshot of Codebook



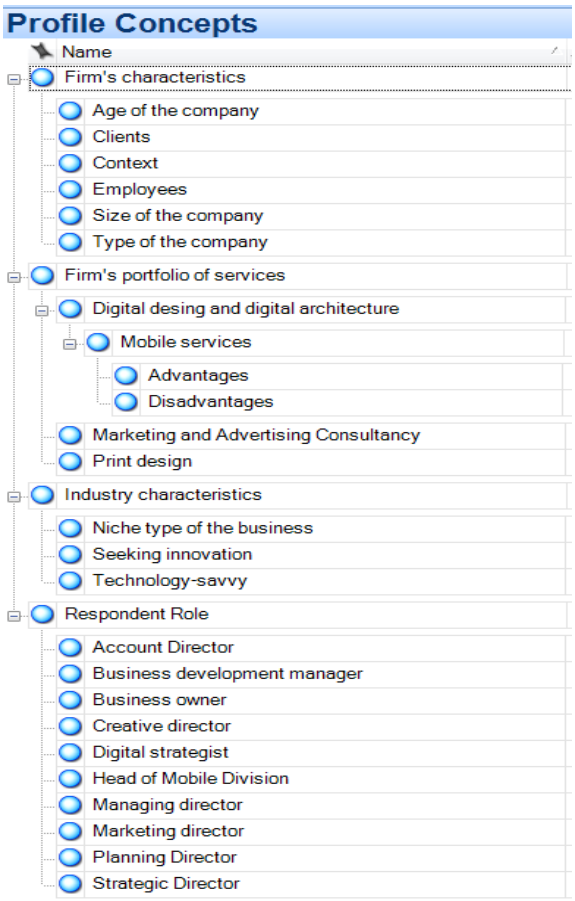
Weitzman (2000), however, argues that the use of software is helpful in handling large amounts of data by the automation of coding, search and retrieval of information. In this study the author utilised NVivo 10 qualitative data analysis software and Microsoft Word to arrange, scan, systematically display and interpret data patterns across cases (Miles and Huberman 1994; Mills et al. 2006). The author identified the following benefits of using NVivo software and Microsoft Word:

- *Data security and data reliability.* The NVivo file acts as a single storage space that contains all primary and secondary sources and all analytical self-reflection notes. To avoid the risk of losing information or of the file being corrupted the author has, however, saved the file on multiple cloud-based and hardrive storage spaces. Moreover, NVivo software enabled systematisation of data analysis;

hence, reducing number of errors during the coding process. NVivo allows keeping a log of all data meaning that the development of codes and node folders or node sets could be traced. A node is a collection of references about a specific incident, theme, individual or other research objects and outcomes. In this study a node set represents separate themes which were pre-determined in the interview scenario (subsection 4.5.2.2.) or emerged during the actual data collection, interviewing.

- Data analysis process efficiency, reliability and validity. NVivo 10 software helped to reduce time spent on sorting, structuring data and to focus on redefining outcomes and theory construction. Use of the software enables a higher level of transparency which is critical for theory building purposes ensuring validity and reliability of research outcomes. NVivo software allows for the automatic linking of coded data and the extraction of codes related to a specific concept across all cases (Bazeley and Jackson 2013). Hence, similarities and differences between the interviewees' claims is easier and more consistent when using NVivo software which standardise the process of coding via building and storing the library of concepts and categories to be used systematically across cases. Records of relationships, created by linking concepts to other types of sources, for instance images, and linking codes to self-reflection notes, i.e. memos, builds a comprehensive system of patterns that can be tracked and identified easily (Bazeley and Jackson 2013). Microsoft Word was employed to record detailed properties, dimensions and characteristics of concepts (see details in the next section, 4.6.2.). Moreover, NVivo 10 was used to colour code different sets of primary data, interviews and other 'soft data' that helped in the clustering process of firms (see Chapter 5, section 5.4.).
- *Theory credibility.* In this study one of the main benefits of using NVivo 10 for data analysis and management was the ability to establish boundaries of the theory by linking characteristics of the sample to research outcomes. This has been done by creating a node folder entitled ‘Profile Concepts’ (see Figure 11) which allowed for the development of a detailed profile on interviewees and firms they represented as well as enabling connections between the profile data and main research outcomes.

Figure 11. Concent of the NVivo folder titled 'Profile Concepts'



Despite the fact that overall the use of qualitative data analysis software is advantageous, it is important to highlight that NVivo is not a 'magic' tool that carries out the analysis for the author. Understanding qualitative data is an intellectual process that requires the author to code the data, assign concepts and establish linkages, interactions and relationships between concepts.

The next subsection explains all the steps in the analytical process carried out in this study.

4.6.2. Data structuring – Analytical process

Table 11 summarises the data analysis process, where the final step results in the development of a substantive theory.

Table 11. A summary of data analysis process

Coding stage	Meaning	Purpose	Results
Stage one – open coding	Understanding incidents, meanings, events on a case-by-case (interview-by-interview) level – How?	Line-by-line, interview-by-interview analysis - induction	The identification of empirical and theoretical concepts.
Stage two – axial coding	Transforming understanding on interview-by-interview level to abstract cross-comparative categories – What?	Synthesis of interview-by-interview analysis - deduction	The identification of abstract categories.
Stage three – selective coding	Integrating core categories into theoretical constructs – Why?	Integration / consolidation	The development of the substantive theory

4.6.2.1. Stage one – Open coding

Open coding transforms the empirical data from individual accounts to cross-population accounts with references grouped around key topics (see the interview scenario, section 4.5.2.2.). The author worked through each of the interview transcripts and employed line-by-line coding to take references around topics and main research objects. Firstly, textual elements such as words, sentences, phrases and paragraphs were analysed to discover and highlight attitudes, incidents (experiences), actions and results of actions (outcomes). These units of information were found by looking for adjectives and transitive (action) verbs. Moreover the author questioned the data by asking the following 'sensitising' questions:

- What is the interviewed individual feeling?
- What is the interviewed individual thinking?
- What are the experiences/incidents?
- What is happening?
- Who are involved (companies, individuals)?
- What is the role of the interviewed individual/company?

Answers to the above questions formed empirical concepts which are directly linked to the units of information within interview transcripts. To label concepts, in most cases

the author used transitive (action) words to reflect on the nature of the research objects. Action concepts in comparison to noun concepts are more suitable for describing a process (Partington 2000). Moreover, according to Denzin and Lincoln (2011) action concepts simplify the identification of patterns phase during the data analysis because issues are addressed dynamically meaning that interviewees mostly discuss process activities rather than illustrate static phenomena. Examples of labels for the action concepts include '*managing projects*', '*communicating*' and '*researching*'. As a matter of fact, where appropriate, the author used directly quoted words to label concepts, a few examples of which are '*managing project*', '*teleworking*' and '*experimenting*'. Overall, some concepts were labeled very close to the interviewees' accounts and other concepts had more abstract labels. In addition, the author followed Martin and Turner's (1986) advice on being flexible during the analysis process, in particular one or more concepts was recorded for a single incident, action or outcome, which in turn supported the process of finding linkages and relationships between concepts. An illustration of this and an example of open coding technique is presented below, Figure 11.

First four interview transcripts were analysed manually in the Microsoft Word file highlighting units of information and allocating initial labels for the concepts. Figure 11 illustrates an excerpt from the first page of a typical interview transcript.

Figure 11. An example of open coding

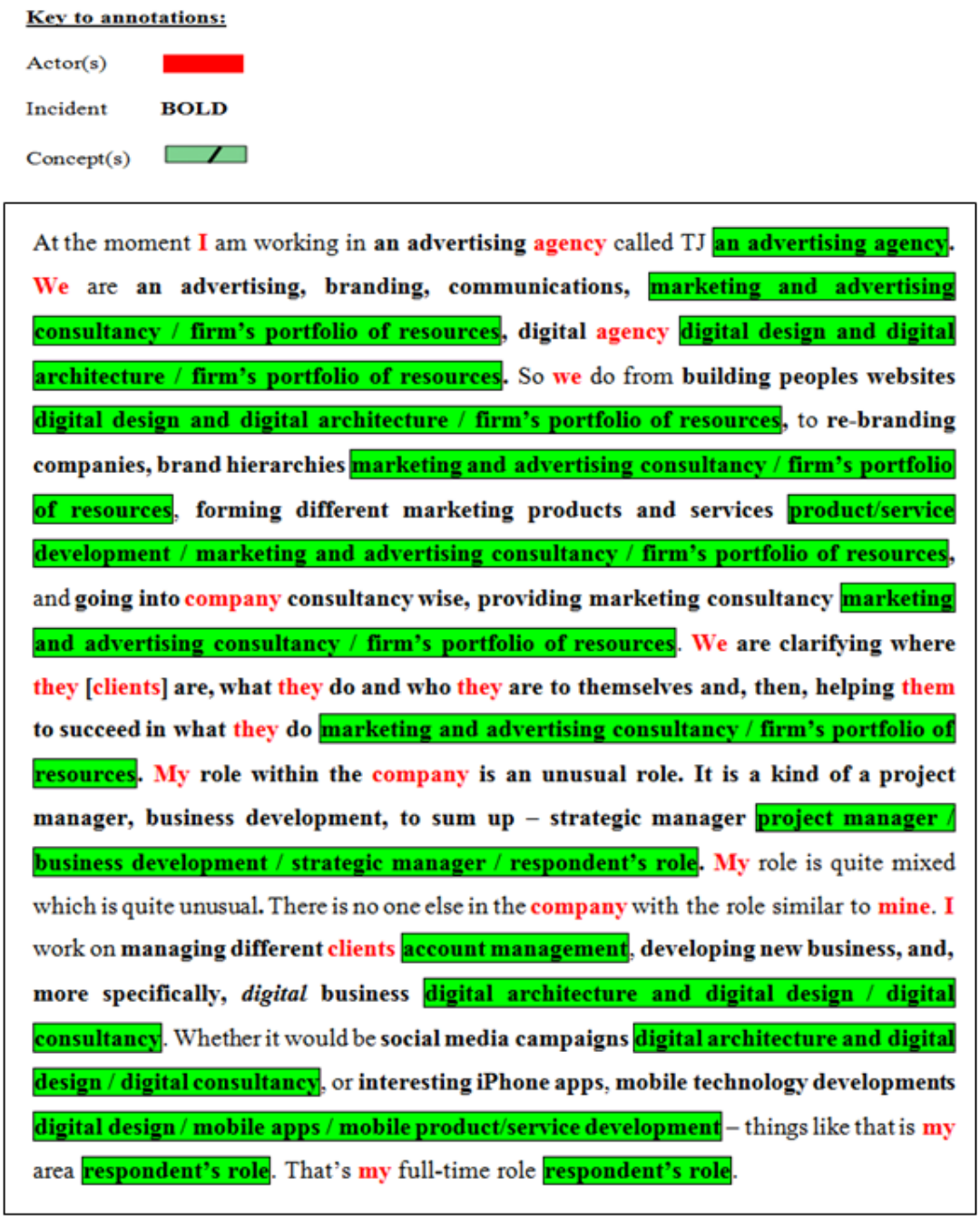
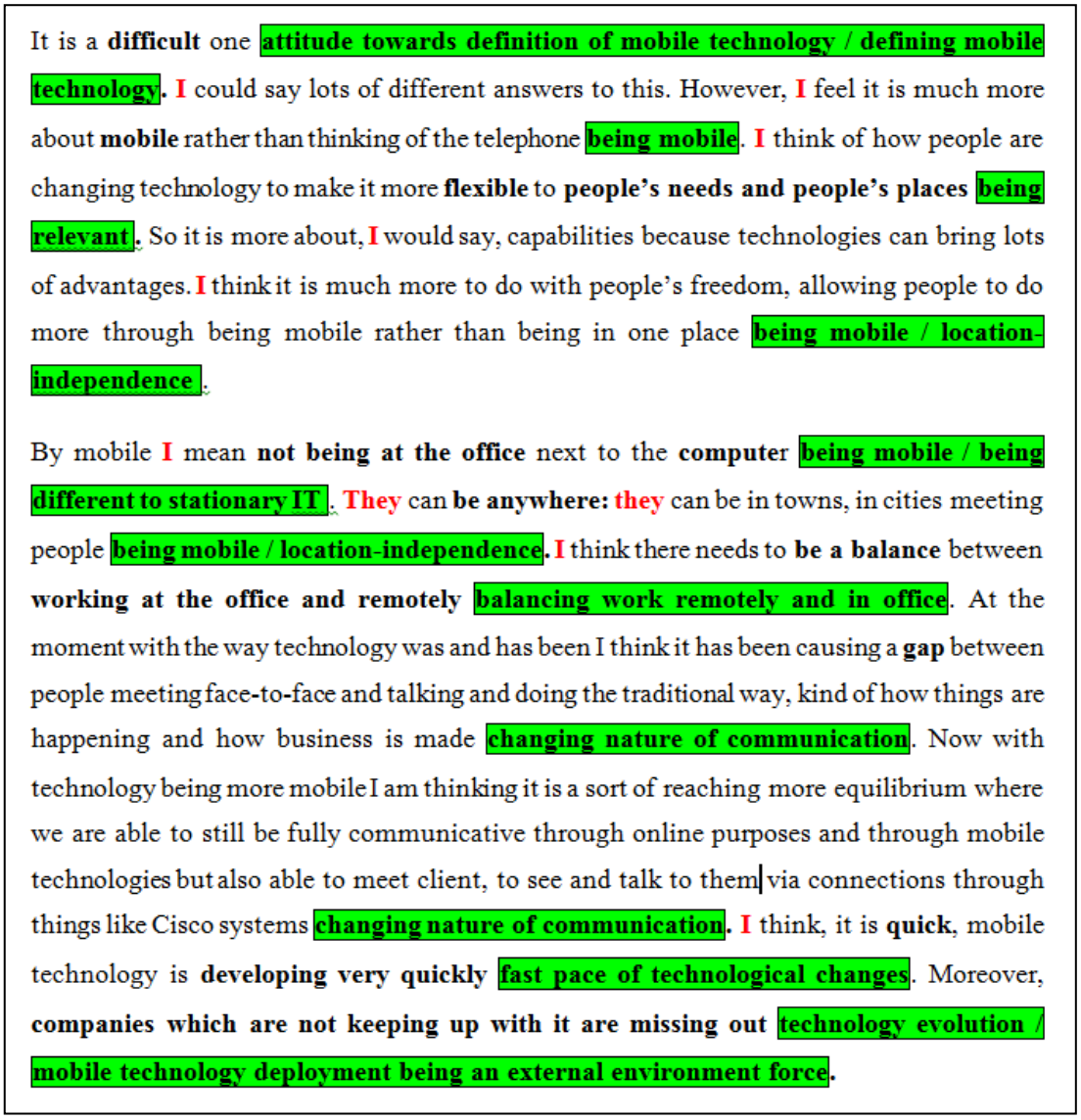


Figure 11. An example of open coding (continued)



It is a **difficult** one **attitude towards definition of mobile technology / defining mobile technology**. I could say lots of different answers to this. However, I feel it is much more about **mobile** rather than thinking of the telephone **being mobile**. I think of how people are changing technology to make it more **flexible** to **people's needs and people's places being relevant**. So it is more about, I would say, capabilities because technologies can bring lots of advantages. I think it is much more to do with people's freedom, allowing people to do more through being mobile rather than being in one place **being mobile / location-independence**.

By mobile I mean **not being at the office** next to the **computer being mobile / being different to stationary IT**. They can **be anywhere: they** can be in towns, in cities meeting people **being mobile / location-independence**. I think there needs to **be a balance** between **working at the office and remotely balancing work remotely and in office**. At the moment with the way technology was and has been I think it has been causing a **gap** between people meeting face-to-face and talking and doing the traditional way, kind of how things are happening and how business is made **changing nature of communication**. Now with technology being more mobile I am thinking it is a sort of reaching more equilibrium where we are able to still be fully communicative through online purposes and through mobile technologies but also able to meet client, to see and talk to them via connections through things like Cisco systems **changing nature of communication**. I think, it is **quick**, mobile technology is **developing very quickly fast pace of technological changes**. Moreover, **companies which are not keeping up with it are missing out technology evolution / mobile technology deployment being an external environment force**.

On reflection, the author did not have any limits on the number of initial concepts because in some instances it seemed challenging to understand fully the concept and its meaning. For example, when discussing learning orientation it was difficult to understand whether interviewees refer to mobile technology deployment in their firms or to their firm's obligation to continuously learn about mobile technology and its deployment without necessarily deploying this technology in their firms. Further interviews focused on clarifying this ambiguity. Hence, two separate concepts emerged; learning orientation which implies a firm's obligation to continuously learn about mobile technology, and learning capability which implies that a firm conducts a certain set of activities helping to generate knowledge which enables effective deployment of

mobile technology. On the other hand, not having limits and using an unstructured approach to coding created an additional challenge for the author, that of confusion.

After line-by-line coding of the first four interviews was completed, the comparative method of grounded theory was adopted to support line-by-line coding of all subsequent interview transcripts. In particular, units of information were examined for similarities and differences between the interviewees' claims. Each concept was then keyed into the NVivo 10 software. Within NVivo concepts can be identified as nodes. The cross-comparative analysis identified some standalone concepts but where strong similarities between individual concepts were found these concepts were treated as sub-concepts and were grouped to represent a more general concept. In this study general concepts are labeled as theoretical concepts because they represent abstract meanings and are foundation in building a substantive theory.

Theoretical sampling assisted in reduction of the confusion, mentioned in the previous paragraph, because as the simultaneous data collection and analysis progressed, confusions around meanings diminished and confidence in identifying general abstract concepts increased. Additionally, it is important to emphasise that all the codes in this study were derived inductively from the raw data and were not predetermined in any way. However, the literature does assist with a mental coding scheme, in order to assist the initial coding process and to deal with the confusion. Interviews 24 and 25 did not add any new concepts including interview 26, which is a divergent case in expressing negative views in the value of mobile technology and its deployment in the business context. Interview transcript 26 contained the same and not more ideas that were coded similarly to interview transcripts two and 15.

Cross-comparative analysis and theoretical sampling aid in creating a hierarchy of nodes (or node sets) to structure concepts with initial indication of linkages between concepts. By doing this the author has gradually proceeded to the next stage of the data analysis – axial coding. Furthermore, memos (reflective notes) were written throughout the open coding process to keep track of ideas and thoughts on linkages between concepts.

It is important to note that the first four interview transcripts were revisited to conduct the comparative analysis in line with the emerging node folders / sets. The final version

of ten open coding node sets containing 50 theoretical concepts emerged after interview 26, when theoretical saturation had been reached (see Table 12). Each of these 50 concepts was considered as a potential category to be explained and examined in the second stage of coding – axial coding. In addition, Table 13 illustrates how representative the theoretical concepts are across the sample. Overall data analysis included the profile concepts, which helped to identify and examine diverse practices in deploying mobile technology.

Table 12. Open Coding Node Sets

Node sets representing individual topics*	General nodes (theoretical concepts emerged from the empirical data)
1 - Profile information	Firm's characteristics, Firm's portfolio of services, Respondent's role, Industry characteristics
2 – Nature of mobile technology	Distinctive characteristics of mobile technology, Defining mobile technology, Distinctive characteristics of mobile technology – Negative, Context of deploying mobile technology, Values of mobile technology
3 – Mobile technology resources	Mobile technology hardware, Mobile technology software, Mobile technology skills, Internal social relationships, Business networks and relationships,
4 – Organisational culture	Learning style, Technological orientation, Client orientation, Adhocracy
5 – Mobile technology deployment process - activities	Communicating, Using mobile social media, Developing content, Integrating mobile content, Delivering services and products, Managing projects on the go, Managing projects on the go - Negative
6 – Mobile technology deployment process - routines	Researching market, Tracking competition, Experimenting
7 –Mobile technology capabilities	Defining mobile technology capabilities, Acquiring mobile technology resources, Accumulating mobile technology resources, Creative spanning of mobile technology resources, Transforming, Learning, Solving clients' problems, Leading
8 – Nature of service innovation	Defining service innovation, Defining service innovation practices
9 – Mobile technology deployment – Service Innovation Practices	Stimulating SIPs, Facilitating SIPs, Enabling creativity

*Identifying prototypical categories – work in progress

Table 12. Open Coding Node Sets (continued)

Node sets representing individual topics*	General nodes (theoretical concepts emerged from the empirical data)
10 - Mobile technology deployment – Service Innovation Process Practices: Areas / Outcomes	Communicating with customers, Promoting, Managing operations, Delivering service, Maintaining and developing service, Creating new business (division)
11 - Mobile technology deployment – Service Innovation Product Practices: Areas / Outcomes	Extending existing services, Repackaging existing services, Developing and delivering new lines of services

*Identifying prototypical categories – work in progress

Table 13. Theoretical concepts emerged from the data

Title of the Concept	References*	Sources**
Managing operations	181	21
Distinctive characteristics of mobile technology	153	31
Managing projects on the go	152	28
Acquiring mobile technology resources	140	11
Learning	125	28
Mobile technology skills	123	28
Creative spanning of mobile technology resources	117	20
Delivering services and products	107	28
Firm's characteristics	104	31
Client orientation	97	25
Researching market	97	28
Promoting	96	28
Context of deploying mobile technology	95	31
Adhocracy	92	18
Integrating mobile content	88	25
Solving clients' problems	87	28
Respondent's role	84	31
Communicating with customers	78	25
Experimenting	77	15
Using mobile social media	74	17
Communicating	72	27
Firm's portfolio of services	71	31
Learning style	69	28
Accumulating mobile technology resources	62	14
Leading	59	28
Mobile technology hardware	56	28

*Number of text elements referenced as the concept

**Number of sources/interview transcripts wherein the concept was detected

Table 13. Theoretical concepts emerged from the data (continued)

Title of the Concept	References*	Sources**
Values of mobile technology	55	28
Internal social relationships	54	26
Transforming	54	28
Developing content	52	23
Tracking competition	45	15
Defining mobile technology	44	31
Mobile technology software	42	28
Defining service innovation	41	22
Stimulating SIPs	41	28
Enabling creativity	41	18
Delivering service	38	18
Defining service innovation practices	35	21
Technological orientation	30	15
Business networks and relationships	29	16
Defining mobile technology capabilities	25	16
Maintaining and developing service	22	18
Facilitating SIPs	21	13
Extending existing services	21	11
Repackaging existing services	15	8
Industry characteristics	13	6
Developing and delivering new lines of services	11	8
Creating new business (division)	10	8
Distinctive characteristics of mobile technology - Negative	8	3
Managing projects on the go - Negative	4	3

*Number of text elements referenced as the concept

**Number of sources/interview transcripts wherein the concept was detected

4.6.2.2. Stage two – Axial coding

The second stage, axial coding, focuses on identifying abstract groups of concepts entitled as 'categories'. Strauss and Corbin (1990) use the similar label for the main groups of concepts which can be linked and represent a larger entity. In this sense, concepts turned into sub-categories. As opposed to the first stage of coding that entails breaking down the raw data into primary units of analysis (concepts), axial coding integrates the outcomes of open coding together by refining and linking, integrating theoretical concepts. Theoretical concepts become characteristics of the categories.

On reflection, the axial coding process was the most time consuming and complex phase of developing a substantive grounded theory. The author followed Strauss and

Corbin's (1990) approach to axial coding by repeatedly and continuously looking at and re-examining the data, *"moving between inductive and deductive thinking"* (Strauss and Corbin 1990, p. 111). The interplay between inductive and deductive thinking is in fact a critical phase to building the theory because in addition to a proposing (inductive thinking), there is a checking and verifying (deductive thinking). Strauss and Corbin (1990, p. 111) conclude, *"This back and forth movement is what makes our theory grounded!"* In reality implementation of the axial coding, moving between inductive and deductive thinking, involved two phases, (1) categories' identification and (2) categories' refinement.

(1) Categories' identification

Categories were identified and created by comparing the initial theoretical concepts. Where similarities between theoretical concepts were found, meaning group of concepts appeared to relate to the same phenomenon, a category was identified. For example, in integration mobile technology hardware and mobile technology software represent a mobile technology infrastructure, a mobile technology resource that a firm has and works with. However, additional concepts such as mobile technology skills, internal social and external business networks and relationship and all concepts related to organisational culture were identified to represent a single category entitled 'mobile technology resources'.

Martin and Turner (1986) approve an early definition and identification of categories as the coding proceeds. The author, therefore, started to reflect on the data and identify potential or prototypical categories at the first stage of coding. Table 12 (first presented in the previous subsection) lists node sets representing individual topics, which are first attempts to categorise theoretical concepts. In reality, these prototypical categories helped to test abstract ideas and deductive thinking of the author for credibility, plausibility and accuracy. Memos supported the process of abstraction and helped to reflect and write down the ideas around prototypical categories.

Consolidation of concepts into categories was supported by recording properties and dimensions, an approach adopted from Corbin and Strauss (2008). In Strauss and Corbin's (1990, p. 101) words properties of a category represent *"the characteristics of a category, the delineation of which defined and gives it meaning"* and dimensions of a

category – *"the range along which general properties of a category vary, giving specification to a category and variation to the theory"*. In this study the author identified properties by looking at adjectives, adverbs, nouns and phrases that represent further characteristics of a category. For example, the author came to a conclusion that the concept labelled as 'value of using mobile technology' is characterised by range of benefits such as (1) being cross-functional, (2) being intuitive, (3) being convenient, (4) being immediate, (5) being relevant, (6) being engaging, (7) being creative and (8) balancing work and personal life. Within each of these properties the author identified a single dimension that placed each property within an extent from being explicit to implicit. Explicit implies that a characteristic is related to technical benefits of mobile technology. Implicit implies that a characteristic is related to business benefits of mobile technology. As a result of analysing dimensions it was clear that all 8 properties represent distinct groups of value. Hence sub-concepts were determined:

- Functional value, includes three properties which are explicitly technical in nature, (1) being cross-functional, (2) being intuitive, (3) being convenient;
- Social value, includes three properties which are placed in-between explicit and implicit, partially of technical benefits and partially of business benefits (business relationships), (4) being immediate, (5) being relevant, (6) being engaging;
- Creative value (includes (7) being creative) and emotional value (includes (8) balancing work and personal life), which fully represent business benefits of mobile technology and are associated with employees' motivation.

Additionally, the author realised that the above discussed concept due to complexity and importance represents a sub-category to a larger category 'context of deploying mobile technology' at work; initially perceived as the individual concept (see Table 13 above).

As with the open coding stage memos aided in consolidating and grouping concepts into categories because using memos the author reflected on the meaning and definition of each concept, relationships between concepts and existence of a higher order group, a category. Figure 12 and Figure 13 show an example of how concepts are integrated into a category using memos and description of properties and dimensions. Figures 12 and13 illustrated how four individual concepts such as 'learning orientation', 'technological

orientation', 'client orientation', and 'adhocracy' were consolidated and integrated under a single category, 'organisational culture', which eventually was recognised to be part of a larger category 'mobile technology resources'. Figure 13 characterises four concepts by highlighting key words (red bold font), specifying attributes such as properties (yellow highlight, red and yellow arrows) and dimensions within each property. The analysis indicated that all four individual concepts, 'learning orientation', 'technological orientation', 'client orientation', and 'adhocracy', represent an organisational system of behavioural norms and orientations - 'organisational culture' - that is directly linked to deployment of mobile technology. The author identified two properties, which all four concepts share in common such as an extent (the degree to which a particular orientation is adopted organisation-wide or by certain individuals) and a mode (the type of behavioural orientation). Table 13 which displays the representation of the theoretical concepts across the sample, reports that the majority of firms that deploy mobile technology adopt all four or certain types of behavioural orientations to deploy mobile technology. Memos (see Figure 12) indicate that not all firms adopt technological orientation and adhocracy. Hence, there is an indication of diverse practices in deploying mobile technology across interviewed firms.

It is important to note that not all concepts could be integrated on the basis of properties and dimension but integration using memos was used for all theoretical concepts.

Figure 12. An example of integrating concepts using memos

Open coding memo: Learning orientation

- It is tendency of the firm to continuously create and use knowledge, sensing and analysing business opportunities.
- All interviewees who deploy mobile technology either internally (operational process) only or both internally and externally (to develop and deliver mobile technology-based solutions/content/services) emphasise the importance of learning within the process of deploying mobile technology.
- Learning is particularly important to create and use knowledge around mobile technology, its functionalities, its usage and business benefits.
- Organisational benefits of learning about mobile technology are recognised as a number of firms discuss external routes to learning, i.e. attending external events, and internal routes to learning available organisation-wide, i.e. subscriptions to databases, technology-related published materials.
- Mostly, learning about mobile technology is predominantly associated with individuals and the personalities of people working in firms who can influence others in adopting and deploying mobile technology internally (operational process) but most importantly externally (to develop and deliver mobile technology-based solutions/content/services) – *potential link with entrepreneurial/intrapreneurial orientation!*

Open coding memo: Technological orientation

- It is organisational orientation to embrace technology by sensing and seizing technological opportunities.
- Groups of individuals who deal with digital and mobile technologies extensively are found to share similar behavioural patterns and beliefs, in particular, and embracing latest technological developments in order to experience and understand mobile technology for integration of mobile technology into digital and other solutions for problems that clients encounter.
- Interviewees are referring to mobile technology in particular emphasising that with other technologies experience is already established. Hence, in the industry a tendency to follow technological developments particularly related to deploying mobile technology is a current 'must' for companies delivering marketing, advertising, digital architecture and digital design services.
- Learning orientation is a prerequisite to embracing technology and to building substantial technological knowledge, and being innovative (*for some firms, which develop new departments and teams whose responsibilities are to scan for the latest technological trends and experiment with further innovative ways of using mobile technology*).
- Not all interviewees are emphasising these beliefs – in majority only these that offer mobile technology integrate solutions/content/services to their clients.

Open coding memo: Client orientation

- It is a propensity to be responsive and proactive in satisfying client's needs.
- All interviewees who deploy mobile technology emphasise understanding and satisfying client's needs. However, differences exist: some (majority) firms are responsive and proactive in deploying mobile technology.
- Responsiveness to client's needs is associated with deployment of mobile technology being driven by the clients' needs.
- Proactiveness to client's needs is associated with deployment of mobile technology being driven by the firm's aspirations and strategic goals – sensing new opportunities.

Figure 12. An example of integrating concepts using memos (continued)

Open coding memo: Adhocracy

- It is a flexible organisational structure of operational process (project-based), which enables *"adaptability"* (thinking, mind-set) and creative thinking.
- Flexibility is discussed in terms of freedom and independence of any operational constraints such time, location – mobile technology enables such flexibility and a need for such flexibility stimulates deployment of mobile technology.
- Teleworking and virtual working are referred to as flexible options to traditional office-based organisational structures.
- Not all interviewees who deploy mobile technology support teleworking and virtual working practices.

Figure 13. An example of integrating concepts using properties and dimensions

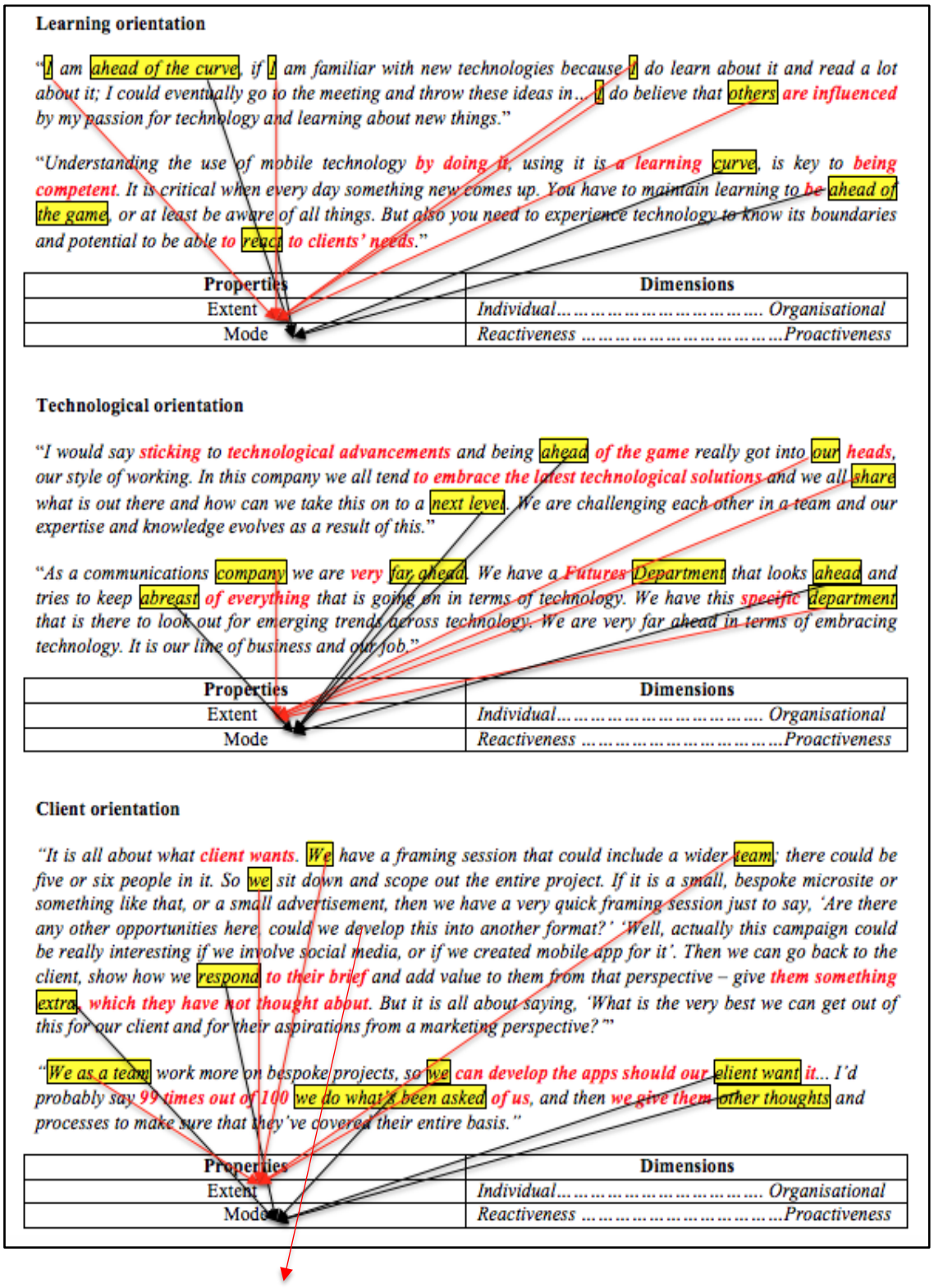


Figure 13. An example of integrating concepts using properties and dimensions (continued)

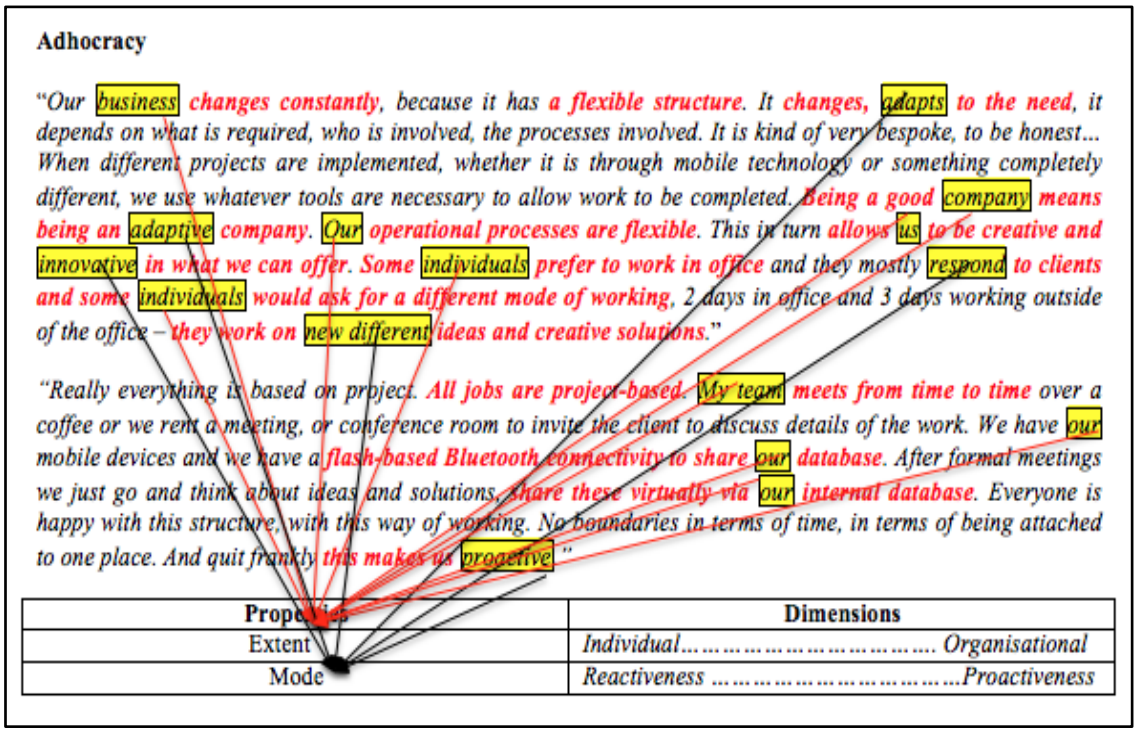


Table 14 overleaf lists 49 concepts, which were finalised and integrated into sub-categories or categories used in phase two of axial coding. Some concepts were renamed to clarify its meaning and context. Only one concept from the initial list (Table 13), 'industry characteristics' was removed from further analysis due to its inability to be linked to other categories and to explain other categories. Moreover, as this study focuses on a particular contextual setting, namely creative SMEs delivering marketing, advertising, digital architecture and digital design services, the references related to the industry characteristics were shared across 6 interviewees who mentioned such industry characteristics as specialism, innovativeness, and technology-oriented. All of these characteristics are discussed within different aspects such as organisational culture, innovation practices – where across sample representation is stronger.

The next phase in the axial coding stage is categories' refinement, which a final step before finalising and building the theory. This is explained further.

Table 14. Theoretical categories emerged from theoretical concepts

Title of the Concept	Amendment	Category	Type
Managing internal operations	Renamed / Integrated	SIPPc* area	Outcome
Distinctive characteristics of mobile technology	Integrated	Context of deploying mobile technology	Context
Acquiring mobile technology resources	Integrated	Mobile technology capabilities	Process
Learning	Integrated	Mobile technology capabilities	Process
Mobile technology skills	Integrated	Mobile technology resources	Process
Managing projects on the go	Integrated	Mobile technology deployment activities	Process
Spanning mobile technology resources creatively	Integrated	Mobile technology capabilities	Process
Delivering services and products via mobile technology	Renamed / Integrated	Mobile technology deployment activities	Process
Firm's characteristics	Unchanged	Profile	Diversity in Practice
Client orientation	Integrated	Mobile technology resources	Process
Researching market	Integrated	Mobile technology deployment routines	Process
Promoting	Integrated	SIPPc area	Outcome
Context of deploying mobile technology at work	Renamed / Integrated	Context of deploying mobile technology	Context
Adhocracy	Integrated	Mobile technology resources	Process
Integrating mobile content into existing services and products	Renamed / Integrated	Mobile technology deployment activities	Process
Solving clients' problems	Integrated	Mobile technology capabilities	Process
Respondent's role	Unchanged	Profile	Diversity in Practice
Communicating with customers	Integrated	SIPPc area	Outcome
Experimenting	Integrated	Mobile technology deployment routines	Process
Using mobile social media	Integrated	Mobile technology deployment activities	Process
Communicating	Integrated	Mobile technology deployment activities	Process
Firm's portfolio of services	Integrated	Profile	Diversity in Practice
Learning orientation	Renamed / Integrated	Mobile technology resources	Process
Accumulating mobile technology resources	Integrated	Mobile technology capabilities	Process
Leading	Integrated	Mobile technology capabilities	Process

Table 14. Theoretical categories emerged from theoretical concepts

Mobile technology hardware	Integrated	Mobile technology resources	Process
Values of mobile technology at work	Renamed / Integrated	Context of deploying mobile technology	Context
Internal social relationships	Integrated	Mobile technology resources	Process
Transforming	Integrated	Mobile technology capabilities	Process
Developing mobile content	Integrated	Mobile technology deployment activities	Process
Tracking competition	Integrated	Mobile technology deployment routines	Process
Defining mobile technology	Integrated	Context of deploying mobile technology	Context
Mobile technology software	Integrated	Mobile technology resources	Process
Defining service innovation	Integrated	Service innovation	Perception
Stimulating SIPs	Integrated	SIPs** and mobile technology capabilities	Interaction
Enabling creativity	Integrated	SIPs and mobile technology capabilities	Interaction
Delivering service	Integrated	SIPPc area	Outcome
Defining service innovation practices	Integrated	Service innovation	Perception
Technological orientation	Integrated	Mobile technology resources	Process
Business networks and relationships	Integrated	Mobile technology resources	Process
Defining mobile technology capabilities	Integrated	Mobile technology capabilities	Perception
Maintaining and developing service	Integrated	SIPPc area	Outcome
Facilitating SIPs	Integrated	SIPs and mobile technology capabilities	Interaction
Extending existing services	Integrated	SIPPd*** outcome	Outcome
Repackaging existing services	Integrated	SIPPd outcome	Outcome
Developing and delivering new lines of services	Integrated	SIPPd outcome	Outcome
Creating new business (division)	Integrated	SIPPc area	Outcome
Distinctive characteristics of mobile technology - Negative	Divergence	Context of deploying mobile technology	Context
Managing projects on the go - Negative	Divergence	Mobile technology deployment activities	Process

*SIPPc stands for Process Service Innovation Practices
**SIPs stands for Service Innovation Practices
***SIPPd stands for Product Service Innovation Practices

(2) Categories' refinement

In this study categories' refinement was conducted by cross-comparison of interviewees' views, meanings, incidents and actions concerning a single event, the process of deploying mobile technology in creative SMEs delivering marketing, advertising, digital architecture and digital design services. The author reflected on coding density in terms of the number of text elements referenced under the integrated category or sub-category. However the main emphasis was on examining the number of sources wherein the integrated category was detected – to understand how widely particular views were held across the sample. Similarly to the open coding practice, when labeling the categories the author attempted to capture the terms used by the interviewees to describe their views, meaning, incidents and actions.

Categories' refinement focused on understanding relationships and interactions between theoretical concepts. This has been done mostly by using methods discussed under phase one of the axial coding, memos and identification of general patterns which support the creation of links between a research phenomenon and theoretical concepts. Glaser (1992) refers to this method as establishing 'coding families', which at the bottom contain substantive in nature theoretical concepts and at the top more abstract in nature categories. Nine out of ten categories (see Table 14) were integrated using the 'coding families' method. In this study the most frequently occurring patterns were (1) means – end and (2) local – general. For example, 'accumulating mobile technology resources', 'acquiring mobile technology resources' and 'creative spanning of mobile technology resources' are (local) practices of 'leveraging mobile technology resources' (general practice). In this particular example local practices represent theoretical concepts of a single theoretical category 'leveraging mobile technology resources', which in turn is a subcategory for a higher order abstract category – 'mobile technology resources'.

In addition to the 'coding families' method to refine categories, the author used a conditional matrix method to refine a single category 'context of deploying mobile technology'. Corbin and Strauss (1990, pp. 96-115) introduced the conditional matrix as a conceptual tool that explains and maps relationships and interactions between theoretical concepts. It is an analytical diagram that integrates a range of conditions and

outcomes related to a phenomenon, and in so doing it helps to determine cause-and-effect relationships between theoretical concepts, dimensions and the properties of concepts. In this study the author applied the conditional matrix due to the complexity of theoretical concepts and large number of characteristics for individual concepts that portray the group of ‘context’ - ‘context of deploying mobile technology’.

Corbin and Strauss’s (1990) conditional matrix includes the following six sections: (a) casual conditions, (b) phenomenon, (c) context, (d) intervening conditions, (e) action/interaction strategies and (f) consequences. According to Partignton (2000), researchers have the flexibility to adapt sections to their own research context. Table 15 overleaf illustrates what factors were used to build the conditional matrix used to explain the ‘context of deploying mobile technology’ category.

Table 15. A refinement of the category 'context of deploying mobile technology', using the conditional matrix (after Day 2007)

Factor	Definition	Associated concepts and their characteristics
Casual conditions (the factors that lead to the phenomenon)	Local conditions that encourage adoption of mobile technology	Theoretical concept 'Context of deploying mobile technology at work' Associated properties: • Being a source of information • Being affordable *"Mobile technology is just very, **very accessible** now. I think that has sped up the development of it and the progress of it… A lot of these technologies out there actually **do not cost a lot**… It is **almost free.**"* [I6] *"Most mobile devices on the market allow **access to information** using mobile Internet and transmitting data via text, emails and other content… When we talk to our clients, the **ability to access information from anywhere** is what I understand mobile technology is and it should really be."* [I7]
Phenomenon (the core incident)	Mobile technology is a manifestation of mobile technology categories through the creation and delivery of new opportunities on both the personal and business level, opportunities that are not restricted by physical boundaries of location and time.	Theoretical concepts 'Defining mobile technology' and 'Distinct characteristic of mobile technology' • Mobile technology is different to fixed network and stationary desktop IT • Being mobile is a key distinctive characteristic *"Mobile technology is about **mobility** and the ability **to take your work wherever** you go."* [I28]
General context - external environment (the external factors that constrain or enable the phenomenon happening)	Push factors and barriers/challenges to mobile technology adoption	Theoretical concept 'Context of deploying mobile technology at work' Associated properties: • Market forces • Technology evolution • Privacy • Changing nature of communication • Diverse variety of mobile devices • Complex nature of mobile technology • Functional limitations of mobile technology "*It's important for us, as a business, to **be at the forefront of any new technology***" [I24]

Factor	Definition	Associated concepts and their characteristics
		"*Where **the market is quite advanced**, companies **must be on the edge of technology**.*" [I18] *"At the moment, I do not think that my bosses will invest into cloud information sharing to access our files from anywhere. There is **a massive risk** of people looking at it or the system going wrong. Mobile technology still raises these **concerns about privacy** as the device itself, because we are having this piece of technology in our pockets and it **contains all our personal information**. There is **a 'naughty' aspect** in mobile technology for every user and everyone in various industries."* [I14]
Intervening conditions (the factors that enable consequences)	Distinctive features of mobile technology (location and time independence) that encourage users to deploy it	Theoretical concept 'Distinct characteristic of mobile technology' Associated properties: • Being portable • Being continuously accessible for communication /interaction • Being personal *"Mobile technology can **be individual**. So, you can also **identify who uses it**; who is interacting through these things."* [I6] *"With mobile technology you are **in touch with everybody**. Communication is very important. It means that you have touch points within any stage in a communication channel. You have **communication with clients on demand** when they need and when you need to spell out something."* [I3] *"Before, you were carrying a bag full of stuff, and now you don't need to do that – **it can be carried on** either a small mobile device or a small mobile phone."* [I24]
Consequences (the intended or unintended outcomes)	Business benefits of deploying mobile technology.	Theoretical concept 'Values of mobile technology at work' Associated properties: 1. Being cross-functional 2. Being intuitive 3. Being convenient 4. Being immediate 5. Being relevant 6. Being engaging

Factor	Definition	Associated concepts and their characteristics
		7. Being creative 8. Balancing work and personal life Integrated sub-concepts: • Functional value (1-3) • Social value (4-6) • Creative value (7) • Emotional value (8) *"Mobile technology **creates new value**… opportunities that create innovation and distinct communication.*" [I12]

On reflection the author found the axial coding stage of the data analysis as the most challenging and labour intensive. This is due to a lack of guidance in the existing literature regarding the axial coding stage and its implementation. In particular, it was difficult to identify interactions and 'cause' and 'effect relationships. However the confidence level increased as the author progressed through the data analysis.

Chapter 5 reports on the outcomes of the axial coding by examining eleven categories drawn from theoretical concepts, which are classified as the following types: context, perceptions, process, interactions and outcomes. From ten categories six 'super' or core categories were consolidated. These core categories represent elements of the substantive theory (theoretical constructs), which was discovered in the next stage of data analysis – selective coding.

4.6.2.3. Stage three – Selective coding

As opposed to the first and second stages of data analysis where the author described the empirical data, the final stage, selective coding, aims to explain the data by integrating categories, derived from axial coding, into core categories (theoretical constructs) and completing the grounding process by linking core categories (Corbin and Strauss 1990). Selective coding assumes that not all categories are equally important or relevant for the substantive theory. In this study core categories, identification of which is based on the impact level (the highest number of references and greatest frequency of categories' representation within the data), are interrelated to explain the role of mobile technology capabilities in creative service SMEs' innovation practices. Chapter 6 provides a detailed discussion of the selective coding results.

Analytical logic and methods used to implement selective coding are covered in the present subsection.

Selective coding starts with a descriptive storytelling, a narrative for key results – a thick description in Corbin and Strauss's (1990, 2008) words. A descriptive storytelling focuses on the identification of core categories. The author followed a constant comparison approach to cross-compare theoretical categories by characteristics and properties. In doing so the author aimed at seeing which categories are specific forms or characteristics of a higher-level category.

In addition to writing up a narrative, Corbin and Strauss (2008, pp. 106-109) stress the importance of moving from the descriptive narrative to the theoretical explanation of the core categories via analysis of interactions and relationships with other categories. Such a move can be achieved using methods such as integrative diagrams, reviewing and sorting memos. In this study the author adopted the conditional matrix, which was introduced in the previous subsection, to integrate core categories and develop the substantive theory.

Firstly, the conditional matrix was used as a contextual map (see Chapter 6, section 6.2.) to integrate a general context and an immediate context. In this study the general context represents interviewees' views about mobile technology deployment at work on a broader level beyond organisational boundaries – 'the context of deploying mobile technology at work'; the immediate context represents diversity in practices' of deploying mobile technology across the sample firms. Secondly, the conditional matrix was used as a cause-and-effect model (see Chapter 6, section 6.2.) to explain the process of mobile technology deployment by linking the core categories (actions to outcomes) within the immediate layer of the contextual map. As Chapter 6 reports, in this study actions are represented by interaction between mobile technology resources and mobile technology capabilities and outcomes are represented by service innovation practices (SIPs), namely process service innovation practices (SIPPc) and product service innovation practices (SIPPd). Both matrices are presented and discussed in Chapter 6.

4.7. Chapter Summary

This chapter has provided an overview of the key methodological building blocks, namely the research approach, philosophical orientation, and the research strategy (grounded theory), which underpin data collection and analysis. In the detailed discussion on the research strategy implementation, data collection and data analysis, the author demonstrated choices made in line with the grounded theory versions used in this study. Detailed and transparent process of the data analysis illustrated the substantive theory building process, in line with the quality criteria proposed for this study in the earlier subsections (4.4.4.1. and 4.4.4.2.). The next chapter presents and analyses results of the axial coding process focusing on conceptualising the research objects of this study, which are mobile technology capabilities and service innovation practices. This is followed by a discussion of the selective coding results in Chapter 6 where the substantive theory explaining the role of mobile technology capabilities in innovation practices of creative service SMEs is presented. The overall limitations of this study, including methodological limitations, are discussed in the final concluding Chapter 7.

Chapter 5. Findings – Conceptualising Mobile Technology Capabilities and Defining Service Innovation Practices

5.1. Overview of the Chapter

The preceding chapter explained the data analysis process demonstrating the way theoretical concepts, which derived from the empirical data, were integrated into categories. This chapter continues this discussion by presenting and analysing the results of the second stage coding – axial coding. Table 16 lists all the axial categories. This chapter discusses each category in details demonstrating how they are classified under different types, such as context, process, and diversity in practice of deploying mobile technology, perception, interaction, and outcomes.

The findings are presented in a sequence, examining each of the research objects (see Chapter 4, section 4.2.) and following the research objectives of this study, which are outlined in Chapters 1 (section 1.5) and Chapter 4 (section 4.2.). The structure of the presentation is shown in Table 16. Each category is discussed with the reference to its specification that involves sub-categories, properties and dimensions. The discussion of each category involves the author's interpretation of categories including direct extracts from the empirical data, from which categories derived. Extracts from the empirical data in the form of quotes represents text elements references under a certain category, a sub-category or a theoretical concept. Due to the space limitation, the author chose the quotes that best illustrate the categories. The quotes are presented in a tabular form and within the main body of the text supporting the discussion on findings.

As an evidence of consistency among the interviewees the author included frequency information for each category to demonstrate how widely each category is represented across the sample. In addition to that, as stated in the previous chapter (subsection 4.5.1.2.) 28 out of 31 interviewees responded positively to the extensive deployment of mobile technology in their businesses. Three interviewees (2, 15 and 26) expressed negative views and saw no value in the deployment of such technology within the business context. Overall discussion of the results reflects on these negative/divergent views to enable variation, which is the criterion of the theory quality (see Chapter 4, subsection 4.4.4.2.).

Table 16. A Summary of Axial Coding – Identified Categories

Category	Type	Definition	Combined References *	Sources **	Section within the Chapter
Context of deploying mobile technology	Context	The understanding of mobile technology as a work tool, its distinctive features and benefits of deploying mobile technology at work.	355	31, incl. divergent cases	5.2
Mobile technology resources	Process	A complex interactive system of tangible (physical) and intangible (organisational culture and human capital) mobile technology resources.	592	28	5.3.1
Mobile technology deployment activities	Process	Set of activities comprising the mobile technology deployment process.	549	31, incl. divergent cases	5.3.2
Mobile technology deployment routines	Process	Set of regular practices involved in the mobile technology deployment.	219	28	5.3.3
Mobile technology capabilities	Process	A set of five substantive capabilities, which, through the transformation of existing processes, contribute to operational efficiency and effectiveness and also drive strategic change within a business.	669	28	5.3.4
Profile	Diversity in Practice	An impact of the firm's characteristics on responses around mobile technology deployment process and its role in SIPs.	259	31	5.4
Service innovation	Perception	Something novel within organisational operational processes or as unique outcome that can be sold to the market.	76	22	5.5.
SIPs and mobile technology capabilities	Interaction	Relationship indicating the role of mobile technology capabilities in SIPs.	103	28	5.6.1
SIPPc area	Outcome	A SIPPc area as a result of deploying mobile technology.	425	28	5.6.2
SIPPd outcome	Outcome	A SIPPd outcome as a result of deploying mobile technology.	47	18	5.6.3

*Number of text elements referenced as the concept

**Number of sources/documents wherein the concept was detected

Each subscript [I-] is a specific identification code given to each interviewee, with the letter 'I' meaning 'interviewee', followed by the order number of each interview. For further details read Chapter 4, subsection 4.5.1.4.

5.2. The Context of Deploying Mobile Technology

Before asking about the specific activities and routines, which the interviewees' firms have in place when deploying mobile technology, generic understanding of the mobile technology's nature and the general context of deploying mobile technology as a work tool were examined. In the actual fact results of the axial coding revealed the complex nature of the context of deploying mobile technology at work. Table 17 overleaf presents the conditional matrix that explains the factors, which portray the context of using mobile technology at work. Each factor is explained further starting with the discussion of the core phenomenon/incident, which is the definition of mobile technology, from the perspective of the creative SMEs delivering marketing, advertising, digital architecture and digital design services.

Table 17. A refinement of the category 'context of deploying mobile technology', using the conditional matrix (after Day 2007)

Factor	Definition	Associated concepts and their characteristics	Sources*
Casual conditions (the factors that lead to the phenomenon)	Local conditions that encourage adoption of mobile technology	Theoretical concept 'Context of deploying mobile technology at work' Associated properties: • Being a source of information • Being affordable *"Mobile technology is just very, **very accessible** now. I think that has sped up the development of it and the progress of it… A lot of these technologies out there actually **do not cost a lot**… It is **almost free.**"* [I6] *"Most mobile devices on the market allow **access to information** using mobile Internet and transmitting data via text, emails and other content… When we talk to our clients, the **ability to access information from anywhere** is what I understand mobile technology is and it should really be."* [I7]	28 31
Phenomenon (the core incident)	Mobile technology is a manifestation of mobile technology categories through the creation and delivery of new opportunities on both the personal and business level, opportunities that are not restricted by physical boundaries of location and time.	Theoretical concepts: 'Defining mobile technology' and 'Distinct characteristic of mobile technology' • Mobile technology is different to fixed network and stationary desktop IT • Being mobile is a key distinctive characteristic *"Mobile technology is about **mobility** and the ability **to take your work wherever** you go."* [I28]	31 28 31
General context - external environment (the external factors that constrain or enable the phenomenon happening)	Push factors and barriers/challenges to mobile technology adoption	Theoretical concept 'Context of deploying mobile technology at work' Associated properties: • Market forces • Technology evolution • Privacy • Changing nature of communication • Diverse variety of mobile devices	31 31 31 31 31

Factor	Definition	Associated concepts and their characteristics	Sources*
		• Complex nature of mobile technology • Functional limitations of mobile technology "*It's important for us, as a business, to **be at the forefront of any new technology***" [I24] "*Where **the market is quite advanced**, companies **must be on the edge of technology***." [I18] *"At the moment, I do not think that my bosses will invest into cloud information sharing to access our files from anywhere. There is **a massive risk** of people looking at it or the system going wrong. Mobile technology still raises these **concerns about privacy** as the device itself, because we are having this piece of technology in our pockets and it **contains all our personal information**. There is **a 'naughty' aspect** in mobile technology for every user and everyone in various industries."* [I14]	31 31
Intervening conditions (the factors that enable consequences)	Distinctive features of mobile technology (location and time independence) that encourage users to deploy it	Theoretical concept 'Distinct characteristic of mobile technology' Associated properties: • Being portable • Being continuously accessible for communication /interaction • Being personal *"Mobile technology can **be individual**. So, you can also **identify who uses it**; who is interacting through these things."* [I6] *"With mobile technology you are **in touch with everybody**. Communication is very important. It means that you have touch points within any stage in a communication channel. You have **communication with clients on demand** when they need and when you need to spell out something."* [I3] *"Before, you were carrying a bag full of stuff, and now you don't need*	28 28 28

Factor	Definition	Associated concepts and their characteristics	Sources*
		*to do that – **it can be carried on** either a small mobile device or a small mobile phone."* [I24]	
Consequences (the intended or unintended outcomes)	Business benefits of deploying mobile technology.	Theoretical concept 'Values of mobile technology at work' Associated properties: 1. Being cross-functional 2. Being intuitive 3. Being convenient 4. Being immediate 5. Being relevant 6. Being engaging 7. Being creative 8. Balancing work and personal life Integrated sub-concepts: • Functional value (1-3) • Social value (4-6) • Creative value (7) • Emotional value (8) *"Mobile technology **creates new value**… opportunities that create innovation and distinct communication.*" [I12]	28 20 28 18

*Number of sources/interview transcripts wherein the concept(s) was/were detected

5.2.1. Defining mobile technology

Defining mobile technology was challenging for almost all the interviewees. Various interpretations were proposed, but these can be divided into two groups. Firstly, the creative service practitioners interviewed for this research define mobile technology in a set of mobile categories. Mobile devices include tablet computers, laptops (wireless computers) and mobile phones, including smartphones. The interviewees stress that each mobile device has its own purpose. Interviewee 24 interestingly describes mobile devices as follows:

> *"Laptops are feet-down technology, so you are sitting here. The iPad is feet-up technology, so you are lying on the couch."*

Mobile applications, another category of mobile technology, imply software programs for entertainment (games, video and music, photo galleries), social interaction (social

networking sites) and productivity (word processing, document reading and editing processes) that are developed and consumed on mobile devices. Lastly, mobile networks that enable connection to the Internet (3G is mentioned by all 31 interviewees, GPS is mentioned by interviewees 1, 6 and 22) are also suggested as a mobile technology category.

Interviewee 13 defines mobile technology as a set of many categories, by stating the following:

> *"Two together, software side and devices, is where you get the magic. I think when you look at mobile technology, the first thing I think about is the physical hardware and software manifestation of that technology."*

The majority of interviewees (28 out of 31, apart from the divergent cases which are I2, I15, and I26) view mobile technology as being different to fixed network and stationary desktop IT. The difference is seen as the fine line between mobile technology as an extension to other stationary desktop IT provisions and understanding the benefits of deploying mobile technology in particular. Interviewees 25, 27 and 31 say that from a "*technical evolution point of view*" [I25], mobile technology is "*extended functionally from stationary computers*" [I31], but "*in terms of the way people are using mobile technology, it is quite unique and different*" [I27]. Hence, the second meaning attributed to mobile technology is 'deployment of technology', with a particular references to the business setting (deployment of mobile technology at work). Interviewee 29 stresses:

> *"Mobile technology is a transformation of the way I live, the way I work. Mobile technology is an entirely new lifestyle where exchanging information and data is continuous and immediate."*

All 31 interviewees highlighted 'being mobile' as a differentiating factor of mobile technology and as the underpinning principle behind mobile technology functionality and application. Mobile technology is powerful in running the life of an individual:

> *"You can conduct business, your social life, your shopping, your buying; you can pretty much do your life on the move on your phone."* [I22]

It is clear that mobile technology is a physical technology with technical features, which brings into life possibilities to deploy this technology in new and innovative ways. Therefore, to define mobile technology fully, both meanings need to be intertwined. Hence, mobile technology is a manifestation of mobile technology categories through the creation and delivery of new opportunities on both the personal and business level, opportunities that are not restricted by physical boundaries of location and time. External factors, which are push factors and barriers to deploying mobile technology, represent the contextual reasons that encourage or constrain mobile technology deployment. These are presented in the next subsection.

5.2.2. The external factors that constrain or enable the deployment of mobile technology at work

All 31 firms (see Table 17 last column entitled 'Sources') believe that individuals and firms are 'pushed' to adopt and deploy mobile technology. Particularly, practitioners representing creative industries, which deliver marketing, advertising, digital architecture and digital design services (all 31 interviewees) believe that "*it's important for us, as a business, to be at the forefront of any new technology*" [I24]. Hence, the nature of business requires "*staying in tune with technology evolution*" and *"making sure that companies are moving with the times",* as interviewee 7 and 10, respectively, conclude. Technology is seen as integral part of business operations and strategy. Therefore, as the business development manager from firm 10 claims, neglecting or "*struggling to see the relevance of new technology*" to creative business will result in firms "*being left behind.*"

As a result, analysing competition and developing and deploying benchmarking capabilities becomes a priority for creative service providers, as interviewee 24 states:

> *"With a client, with a project, I start looking at competition around that area and what everyone else is doing. I can take the tools that I am already using and embrace them for numerous projects, but then if I continue neglecting the fact that there are changes in the industry – I have to move forward and utilise these changes."*

Having said that, the technology evolution is driven by the market and end-users (market force), as well as by the continuous introduction of incremental and radical

devices into the market. Firms are *"dragged into"* the deployment of mobile technology because, as the managing director from firm 9 declares:

> *"Now I have a client who comes and says, 'I am looking to develop a website for the nightclub scene in this town; I want visitors to be able to upload pictures from evening, fun pictures'."*

Interviewee 18 adds that to operate successfully in the UK, "*where the market is quite advanced, companies must be on the edge of technology.*" This is particularly true in relation to modifying and changing services or products as a result of market (business clients and end-users) changed needs. Interviewee 9 states:

> *"In any case, clients would be anyhow aware of technological changes, and I as person who provide a service such as this need to go and figure out how to bring it into reality."*

Market force translates into deploying mobile technology purely as image, reputation status, "*perception of being advanced*" [I7] in industry that "*is very technology savvy*" [I6], "*moving all of the time… changes drastically quite quickly*" [I10]. "*I correlate technologies with our industry,*" says the business development manager from firm 10. Hence, technology evolution, the "*technological march*" in interviewee 8's words, "*is pushing society… to adapt to technology*" [I15]. On the whole, all 31 creative industry practitioners interviewed for this research highlight two things that derive from the fact that the industry is forced to keep up with technological progress, namely 'pressure' and 'continuous learning'. In fact, interviewee 18 summarises that "*continuous learning is a way to deal with tremendous amount of pressure to join technological progress.*"

Nevertheless, the benefits of using mobile technology do not come without their challenges. A number of barriers prevent creative industry practitioners from using mobile technology in an innovative and creative way, a few of these barriers are linked by their paradoxical nature, because they appear to drive and at the same time impede mobile technology adoption and deployment. The technology evolution that pushes mobile technology deployment is also indicated to be one of the barriers to deploying it, because individuals and businesses cannot cope with the fast pace of technological advancements, hence the diverse variety of mobile technology available. In particular,

Interviewee 8 fears that *"we are going to not be able to keep up with technology… that is going to create in us its own set of stresses and its own disease – a technology-related disease."* The creative director and business owner of firm 4 indicates that a diverse range of mobile hardware confuses users about the purpose of each device, in particular when having a single mobile device is sufficient to complete necessary tasks:

> *"I'd rather have a phone that works as a phone rather than to have all the other pieces tied into that. Because you have the iPad as well, but then again that's carrying something else around, which I don't want to do."*

Nevertheless, the diversity of mobile devices is related to the functional limitations of a particular mobile technology. All 31 interviewees reveal that functional limitations result in having various mobile devices for specific tasks, or indeed preferring fixed networks or stationary desktop IT:

> *"I have an iPad and it is great, but it is not a laptop. A laptop is better than an iPad from the productivity point of view; from a work point of view you need a proper large screen… When you are writing a dissertation on an iPhone, you cannot do that. You could, but it will take a while. So it is not as productive. That is a benefit of a proper desktop computer, even if you have a powerful mobile device."* [I13]

Furthermore, "*mobile technology is not necessarily a simple device*" [I1] (the complex nature of mobile technology, which constrains "*engagement with mobile technology*" [I8] because, as all 31 interviewees claim, complexity is associated with confusion):

> *"I think mobile technology is very confusing. If you don't understand something, you tend to fear it; if you fear something, you tend to run away from it. I think until mobile technology is very simple and clear, people won't use it. That is my feeling. I think it's very difficult to get people to use mobile technologies for business if they don't really understand it… It's like we've got this great technology, but the market is not ready."* [I2]

The changing nature of communication is also viewed as a paradoxical aspect whereby mobile technology advances communication opportunities, given the increased reachability and accessibility of the user to interact and communicate with others, due to

the very nature of its mobility. This differentiates mobile technology from stationary and fixed networks IT. Interviewee 17 emphasises that with mobile technology "*accessibility is easier; anyone can contact you.*" However, the paradox is in that accessibility converts into being a challenge in deploying mobile technology through pressure for users to be continuously responsive ("*you have to answer emails when they come through*" [I4]) and expectations that everything needs to "*happen really quickly*" [I17].

Nevertheless, all 31 interviewees emphasise that a key barrier to deploying mobile technology at work is privacy. Privacy is not of a paradoxical nature but originates from not only complex and functional limitations in trust issues when it comes to confidence in security surrounding information sharing and processing but also from investment decisions to acquire mobile resources for business purposes:

> *"I think when mobile technology becomes more reliable technically, maybe, yes, companies will use mobile technology extensively. At the moment, I do not think that my bosses will invest into cloud information sharing to access our files from anywhere. There is a massive risk of people looking at it or the system going wrong. Mobile technology still raises these concerns about privacy as the device itself, because we are having this piece of technology in our pockets and it contains all our personal information. There is a 'naughty' aspect in mobile technology for every user and everyone in various industries. There is so much power now in the hands of end consumers, but then there are so many risks as well for end-users to be chased, tracked."* [I14]

Despite the fact that there are a number of challenges to mobile technology deployment, at the very least individuals are trapped into deploying and adopting mobile technology as a basic communication tool. The next subsection discusses factors and distinctive features, which encourage interviewees to deploy mobile technology at work regardless of the complexity of the technology itself and all issues arising from inconsistency in technological infrastructure on a national level and around the world.

5.2.3. The local factors and distinctive features that encourage the deployment of mobile technology at work

External challenges to and push factors for mobile technology adoption and deployment are not primary conditions upon which individuals make a final decision to purchase and deploy mobile devices for work purposes. There are more the local level (based on individual judgements) factors that encourage the deployment of mobile technology. The decreasing prices of mobile products and services, and the opportunity to access information through mobile Internet and Wi-Fi connectivity when needed, have diminished all the negative effects of functional limitations, concerns about privacy and security and the general complexity of mobile technology.

Firstly, all 31 interviewees claim, in one way or another, that "*mobile technology is a lot more affordable now*" [I6]. The marketing director from firm 6, for instance, stresses that:

> *"I am thinking the fact that everyone has got an iPhone and, you know, other personal device assistants, or small laptops, iPads and stuff. Mobile technology is just very, very accessible now. I think that has sped up the development of it and the progress of it… A lot of these technologies out there actually do not cost a lot… It is almost free."*

Hence, being affordable overcomes the problem of mobile technology diversity when individuals tend to purchase multiple devices to be used for various purposes, such as smaller devices (mobile phone) that fit into a pocket or devices with a larger screen (table computers), to read files, watch films, etc. Moreover, in comparing mobile technology to fixed networks and stationary desktop IT, price also determines individual preferences. Interviewee 17 outlines:

> *"A desktop computer is much more expensive than a tablet. But then a laptop is also mobile and portable and it is more expensive than a tablet but cheaper than a desktop personal computer. Hence, the best decision is to buy a laptop."*

Secondly, mobile technology as a source of information and data is another significant reason why more individuals and organisations deploy mobile technology at work. 28 interviewees, whose firms extensively deploy mobile technology, are consistent in this

view. Mobile technology is a buffer that enables access to data, stores information and allows the editing and exchanging of data. Interviewee 7 specifies:

> *"Most mobile devices on the market allow access to information using mobile Internet and transmitting data via text, emails and other content… When we talk to our clients, the ability to access information from anywhere is what I understand mobile technology is and it should really be."*

What is more important and different to buying and deploying fixed networks and stationary desktop IT as sources of information is that "*mobile devices can be used wherever you are*" [I21]. Being mobile (the location and time independence) is what distinguishes mobile technology from fixed networks and stationary desktop IT.

The interview transcripts identify three distinctive features that explain what being mobile means. This study finds that the interviewed practitioners extensively deploy mobile technology for work purposes, to perform utilitarian tasks such as communication via voice and texting and to search for information. However, most importantly mobile technology is seen as a device that intertwines personal and work life. 28 interviewees that extensively deploy mobile technology see mobile technology as "*being a personal device*" [I1], which is a direct factor in explaining why mobile devices are mostly deployed on the go.

Interviewee 6 stresses that in the last five years mobile technology has become "*integrated with everybody's day-to-day life, and it is great because it is all in one place.*" As a matter of fact, mobile technology is viewed as a 'personalised' or easily customised technology, "*a lifestyle blueprint*" that "*wraps itself around*" the user by becoming an "*extension of*" the user [I19].

But then contextual challenges regarding concerns over privacy are also true and have become increasingly more important due to the personal nature of mobile technology. This link is particularly important for creative service providers delivering marketing, advertising, digital architecture and digital design services, who need to understand how to push but most importantly pull individuals to consume mobile services:

> *"Increasingly, my thinking is that consumers are more and more selective about how they engage with brands via mobile devices, because it is highly personal.*

> *Mobile technology is permission-based, and it is up to you how you want to interact with brands and what content you want to interact with. For us who are responsible for interaction between consumers and brands, it is important to stay welcomed and not intrusive."* [I12]

In addition, all 28 interviewees that extensively deploy mobile technology see mobile technology as a link to the world outside because the users "*always have the temptation to switch the mobile phone on and see what is happening*" [I4]. Hence, being continuously accessible for communication and interaction facilitates "*easier contact with the real world*" [I16] and "*reachability in any part of the world, anytime*" [I4], which is considered not only negatively ("*a big blurring of expectations… to be always contactable, always working, always thinking*" [I7]) but also as an opportunity, as long as permission for "*on-demand interaction*" [I21] is obtained.

Finally, the mobile nature of communication and the ability "*to take everything that is valuable to you wherever you are*" [I12] is possible because most mobile devices are "*small and portable*" [I5]. Interviewee 24 says:

> *"Before, you were carrying a bag full of stuff, and now you don't need to do that – it can be carried on either a small mobile device or a small mobile phone."*

Because "*all these portable devices, like laptops, personal digital assistants, phones, are always in the hands of a user*" [I25], there is freedom in individuals' movements and the flexibility to be contactable or work on certain tasks irrespective of location. As a matter of fact, "*mobile technology and everything that it stores* [content and services] *can be moved*" [I7], because it is portable and "*very easy to carry*" [I24, I27].

It is important to understand what differentiates the mobile technology, but what is more critical to increasing deployment is the evaluation of value (benefits, if any) that mobile technology creates as a work tool in comparison to fixed networks and stationary desktop IT. The next subsection explores this further.

5.2.4. Business benefits/values of deploying mobile technology

Interviewee 12 states that "*Mobile technology brings an opportunity to integrate a variety of values, as long as there is more value in being mobile.*" Hence, in the oorganisational context the fact that technology is mobile leads to a number of business

benefits (or values) for the user of mobile technology. These benefits are what creators need to evaluate when thinking about applying mobile technology. The new media director from firm 12 thinks that mobility "*creates new value… opportunities that create innovation and distinct communication.*" Interviewee 12 expands his view by listing these values:

> *"So, these values to me would include (I have got a model for this) social value, location value, entertainment value, utility value, information and personal value. All of these six values are inherent in a mobile. Other stationary fixed technologies or communication channels do not have all of these benefits. Mobile technology is unique... Mobile is intuitive, in that location value is not achievable with stationary ICT, and other values are taken on to the next level with mobile technology."*

Table 18 overleaf integrates similarities in the views of what 28 interviewees think constitutes business benefits/values of deploying mobile technology (except for interviewees from firms 2, 15 and 26, who do not see any new value deriving from mobile technology and its use). Consistency amongst the responses is presented under the column entitled 'Sources'. Collectively, four types of mobile technology value are identified, which imply goal-based satisfaction with tasks:

> *"When I think about mobile technology, it is all about how it is going to affect me in my life, work, activities and the tasks I do."* [I11]

Table 18. Values of mobile technology deployment

Value type	Representation Quotes	Sources*
Functional value		**28**
Being cross-functional	*"Mobile technology is great because it is all in one place… You can update content between different devices very easily."* [I6] *"Abilities of mobile technology to perform a variety of activities at the same time: communicate, find your location and search the Web."* [I9] *"Because of cloud computing and hardware that you can access it through, it does not matter where you, as you can collect everything on any device."* [I12]	28
Being intuitive	*"Mobile technology is intuitive, and I can go straight to the heart of what I am planning to do with it. I do not think about how to do it. Mobile technology is so easy to use, so there is no question on how."* [I4] *"Mobile technology is intuitive." [I19] "… using mobile devices is very, very useful, and they are so easy to adopt and use."* [I27]	19
Being convenient	*"Mobile technology? For me it is the convenience of being able to communicate across a multitude of platforms: would it be video, audio, text, whatever. The transfer of information is faster."* [I8]	28
Social value		**20**
Being immediate	*"It gets to them [clients] immediately, so it speeds up our communication process; as a result, decisions are immediate too."* [I6] *"It is revolutionary in terms of speed and business efficiency, really"* [I10] *"Immediacy is something that clicks with me when I think about mobile. Immediacy in speaking to these who I want to speak right now. Immediacy in accessing something what I need right now… I am mobile with opportunities to get immediate access to information. I*	11

Value type	Representation Quotes	Sources*
	can do it when I am meeting with my clients. I can do it when I am drinking my coffee in the morning at the local coffee shop." [I29]	
Being relevant	*"Relevance! It is one-to-one communication. So, when I send you a message, that message is just for you. When you look at the message I am delivering to you, it is relevant to you; it means something to you."* [I3] *"I have to admit relevance is the first thing that comes to my mind. Relevance can be explained in timely decisions, ideas, and responses – so important in business like ours. Why is it so because all depends on data we get and how quick we are to work with it and propose the solutions."* [I14]	7
Being engaging	*"All of this is: 'We are contacting you and you need to contact us'. So, you can do it while people are driving a car or walking."* [I4] *"Holding something small and interacting with the world every single minute through that technology is really fantastic."* [I11] *"I love the engagement aspect of mobile technology because I can now be in touch with individuals who I could not reach before or they can always have access to me. Since a number of missed opportunities is lower."* [I17]	11
Creative value		**28**
Enabling creativity	*"There are many more things facilitating the mobility of the technology, which means more things can be created. I think it is much more to do with people's freedom, allowing people to do more through being mobile rather than being in one place, remaining stationary."* [I1] *"I think the technology is only really driven by our ongoing development as a society. It is just kind of pandering to our needs… In terms of creative delivery*	28

Value type	Representation Quotes	Sources*
	and mobile technologies and things like that, mobile technology really allows brands and companies to find another avenue for people." [I21] *"Creativity is based on flexibility that the use of mobile devices allows. But then having this new platform makes you think of new ways to attract customers and offer different products to your clients."* [I29]	
Emotional value		**18**
Balancing work and personal life	*"It brings to me a lot of flexibility in managing personal and work life, although I head my own small business and have control over the business. In that case it is an even more effective tool to manage, differentiate where to separate in many cases is impossible."* [I11] *"Oh, believe it or not our business is extremely benefiting from mobile technology. Most importantly my staff members. Why? Because they can be accessible anytime anywhere, they can work anywhere anytime. Problem with the child, you can leave earlier and do work somewhere else. It is just that balance of managing things, being responsible for that but at the sometime being in tune with what is going in the office".* [I13]	18

*Number of sources/interview transcripts wherein the concept(s) was/were detected

Functional value

Functional value comprises possibilities that mobile technology creates due to, firstly, technical competencies such as the transmission and exchange of data in different formats, ease of use of technical functions, multitasking when voice conversation can happen simultaneously with texting and browsing the Internet – all of which are shared between various mobile categories, devices, networks (cloud computing) and applications. Hence, all 28 interviewees whose firms extensively deploy mobile technology see this technology as a cross-functional type of technology.

Secondly, although mobile technology is considered to be complex in nature, 19 interviewees out of 28 whose firms extensively deploy mobile technology see it as intuitive. "*Easy to use*" [I31] is something that relates to the intuitive level because of the functionality embedded in a mobile device *("I just look at my mobile phone, I say my name and I say my number and it does the rest for me*" [I8]) that allows a user to personalise it and "*become more intuitive and almost empathetic in terms of proactive responses to an individual's requests*" [I8].

Thirdly, cross-functionality and an intuitive interface collectively make mobile technology convenient in terms of functional benefits such as "*speed and flexibility of interaction and exchange of information*" [I27], portability, ease of use and the ability to communicate on demand. Convenience is emphasised by all 28 interviewees whose firms extensively deploy mobile technology.

Social value

According to 20 interviewees out of 28 whose firms extensively deploy mobile technology, social value covers the purposes of communication whereby the immediacy of a response, and therefore the relevance of timely engagement, is a consequence of mobile technology being mobile. Firstly, the speed of information exchange has already been mentioned when discussing the functional value of mobile technology. However, "*speed of gaining information at fingertips*" [I11] facilitates instantaneity that "*allows you to interact more easily in the real world*" [I16] and "*to react to things quickly*" [I19]. It is about being reactive – albeit instantly and immediately – by "*speeding up the communication process and transmission of data*" [I6].

Secondly, immediacy makes conversation relevant. Reactive behaviour can be transformed into a proactive trait because of the increased level of relevance. Interviewee 5 claims that he gets "*information from clients immediately, when needed, and then there is an opportunity to impress them by adding an extra proposition.*"

Ultimately, relevance and immediacy take mobile communication to a different level of engagement with the world. It is about opportunities to engage with people and brands that could not reach or be reached before:

"It is far easier to collaborate with people. We don't have to be in one location to do something… The use of mobile technology allows that collaboration much better." [I7]

Creative value

All 28 interviewees whose firms extensively deploy mobile technology claim that mobility "*pushes forward creativity in terms of idea generation and setting up business objectives*" [I10] and helps to develop new services for creative sector clients. Creative processes are not constrained by time and specific locations, thus allowing freedom in thinking. The strategic director from firm 21 comments that creative benefits of deploying mobile technology are particularly related to the creative sector context, where curiosity and the search for novelty are commonplace.

Emotional value

The final type of value, emotional, really differentiates mobile technology from fixed networks and stationary IT, where teleworking is not only possible but also more flexible. In the case of fixed networks and stationary IT, work is still location-bound. Mobile technology, on the other hand, balances work and personal life, thereby allowing flexibility and empowerment in managing a workload.

According two interviewees, two issues derive from the opportunity offered by mobile technology to balance work and personal life. On the one hand, enabling creativity is linked to flexibility. The chance to be creative, irrespective of location but also time, is enabled via mobile technology. It also has a positive impact on wellbeing, as, in an attempt to retain business, active individuals still have the opportunity to have breaks and holidays. Eleven interviewees out of 28 whose firms extensively deploy mobile technology agree on this:

"I am not stuck in one place; I can do my things, travel and do the job at the same time. Mobile technology is convenient for me to balance my lifestyle and to balance work and personal life. My business still keeps getting new clients and serving existing ones, even when I am on holiday. But what is most important with mobile technology, I am aware of the progress of the work from primary

sources like emails and documents sent to me via email, not through someone's interpretation of the situation." [I31]

On the other hand, additional 7 interviewees out of 28 whose firms extensively deploy mobile technology claim that balance is a controversial concept when it comes to mobile technology, because the expectations of clients and other social groups that they can approach an individual anytime, anywhere is inconsistent with how much time is spent working:

Excessive work (workaholism), as referred to by 4 interviewees out of the above mentioned 7: "I went on a trip not long ago, and my boss and I were working while we were waiting for a plane… When I went to Egypt on holiday, I was desperate to get online because I just wanted to see what was going on at work. My girlfriend was, 'Please, stop working, we are on holiday'. I am constantly working and desperate to be in tune with what is going on at work. What for?" [I14]

The effect of laziness, as referred to by 3 interviewees out of the above mentioned 7: "I think the only thing that is not acceptable is using your mobile phone within business hours for sending personal texts, taking personal phone calls. Spending most of the time on the phone and actually not doing any work is not acceptable. It is a distraction in some ways when you are connected to the outside world, when you should be efficient and concentrate on your work." [I23]

5.2.5. Summary

Overall the category entitled 'the context of deploying mobile technology' has established that in the organisational context the interviewees see mobile technology as a source of value that derives from deploying mobile technology. Interviewees participated in this study define mobile technology as a manifestation of mobile technology categories through the creation and delivery of new opportunities on both personal and business levels, opportunities that are not restricted by the physical boundaries of location and time. Whether mobile technology is a simple means to advanced communication with no physical boundaries of time and location, or a business tool to boost creative thinking, the interviewees conclude that it is different to

fixed networks and stationary desktop IT. The difference lies in the ultimate business values of deploying mobile technology, namely functional, social, creative and emotional. The next section discusses the categories identified to explain and characterise the process of mobile technology deployment.

5.3. The Process of Deploying Mobile Technology

Results from 28 out of 31 interviewed firms shape the author's understanding on how interviewed firms deploy mobile technology and what capabilities are critical to its deployment. Four categories represent the process of mobile technology deployment, namely mobile technology resources, mobile technology deployment activities, mobile technology deployment routines and mobile technology capabilities. All 28 interviewees, who responded positively to the extensive deployment of mobile technology in their business, are consistent in their views on each of these four categories. In addition, three out of 31 interviewees (2, 15 and 26) saw no value in the deployment of mobile technology within the business context. However, the overall discussion of each category classified under the process of mobile technology deployment reflects on these negative views.

5.3.1. Mobile technology resources

Interviewees from 28 firms deploying mobile technology prioritise the role of mobile technology resources in driving new ways of exploiting it accordingly. Table 19 overleaf illustrates that the category entitled 'mobile technology resources' constitute a complex interactive system of sub-categories, which are tangible (physical) and intangible (organisational culture and human capital) resources. Consistency amongst the responses is presented under the column entitled 'Sources'.

Table 19. Composition of mobile technology resources

Type of the Mobile Technology Resource - Subcategories	Sources*
Mobile technology infrastructure (MTI)	
- *Hardware*	28
- *Software*	28
Organisational culture	
- *Learning orientation*	28
- *Technological orientation*	15
- *Client orientation*	25
- *Adhocracy*	18
Mobile technology skills	28
Business networks and relationships	16

*Number of sources/interview transcripts wherein the concept(s) was/were detected

5.3.1.1. Mobile technology infrastructure

Physical resources in the form of mobile technology hardware and software establish a firm's mobile technology infrastructure (MTI) and represent the only tangible type of asset associated with mobile technology deployment. All 28 firms that deploy mobile technology stress the importance of MTI in the form of hardware and software. In other words, MTI integrates various mobile technology categories used by a firm. Table 20 overleaf provides empirical definitions for each element of MTI supported by the interviewees' direct quotes. Quotes included in the tables are typical and representative of the interviewees' meanings and interpretations, and depth is provided by the addition of other quotes to support the discussion on the findings within the main body of the text.

Table 20. Mobile technology infrastructure and its elements: an empirical illustration

Type of Mobile Technology Resource and its Elements	Empirical Definition	Illustrative Quotations
Mobile technology infrastructure (MTI)	Mobile technology technical base of a firm, including mobile technology hardware and mobile technology software	*"Laptops are the primary mobile technology for our company. We use them on the move and even at office… We have invested in purchasing smartphones for these staff that have not owned them. It allows us to integrate a cloud computing system for sharing information and updating projects' progress… Dealing with a new type of product like mobile application led us to invest heavily in software packages… We did buy two tablets recently."* [I1] *"On a global scale we have got a virtual private network here, so I can log in from home and from everywhere else really and I can look at all my work files. I currently just use a laptop for that, and a normal broadband connection, but also I do that on my phone … I feel this is a much more secure way of accessing our data rather than relying on publicly accessible cloud networks, for instance… This sytems really makes us mobile and enables mobile flexible working"* [I27]
Mobile technology hardware	Mobile technology devices and networks	*"VPN [Virtual Private Network] access is also very good, because as a service company we have timesheets and sometimes it is so difficult to do them in working hours because you really don't have time..."* [I18] *"If I have an iPad or my laptop with me, then of course I do work on amending documentation on these devices… this is what I use to work and complete projects… My firm has purchased iPad, laptop for me…. I have a work mobile, which my company pays for."* [I21]
Mobile technology software	Mobile technology applications or	*"We use FaceTime and Skype and all those things on the go… We use Dropbox on our phones and using it on our laptops and using it with clients to share files and doing*

Type of Mobile Technology Resource and its Elements	Empirical Definition	Illustrative Quotations
	widgets and software programs to use on mobile devices and to develop mobile products and services	*all those things."* [I17] *"The ISMS app is a tactical device that gives people an indication of how we think… I have several apps on my iPad and iPhone that I use as data storage and management tools. It is so useful…. We have a thing called Basecamp, which is essentially a workflow-work management package, which gives project history and access to files. It is an asset management/project management platform. But there is no reason to create anything special to put on a mobile to use that, because it is just straight Web access and we access Basecamp on mobile devices only."* [I19]

Interviewees that deploy mobile technology extensively in their business tend to purchase and establish MTI that include all three mobile technology categories – mobile networks, mobile devices and mobile applications. Respondents allocated these three categories to two elements of MTI, hardware and software. Firstly, mobile technology hardware comprises mobile networks and devices that firms purchase and set up to maintain remote access to documents and give them the opportunity to make necessary changes to files and the system at any time and from anywhere:

> *"We have got an Apple network, we all use iPhones, and getting an iPad is just like getting another iPhone; you can just dump whatever you want on to it instantly. It syncs instantly… Our processes rely on these devices that enable flexibility and efficiency in our operations. So, we do invest and but mobiles, Macs, smartphones for all employees to have that consistency across."* [I27]

Cloud computing and virtual networks are extensively mentioned as platforms for collaborative sharing and project management, and classified as mobile technology hardware because they are intertwined with mobile devices:

> *"We do use cloud computing, so people can work remotely from home or wherever they wish to work from… Cloud computing is great to work in teams on a particular task… It is part of mobile infrastructure, don't you think?"* [I12]

In terms of the reasons behind the investments into establishing MTI and purchasing mobile technology hardware, all 28 interviewees claim that, firstly, mobile technology hardware is cost effective and affordable. On the contrary, firms that do not deploy mobile technology (divergent cases) are reluctant to purchase MTI because they perceive mobile technology categories as an expensive investment, and certainly not affordable for a small firm:

> *"I know some companies use mobiles as a way of actually tracking, keeping tabs on their employees' activities. But then they have probably got sophisticated back-ups for those mobiles. I do not think a small company is very likely to have that in the current state of the technology. It probably requires quite a large investment… The trouble is, very few companies are on the cutting edge of technology, because it is expensive. The cutting edge is always an expensive place to be."* [I15]

Secondly, mobile technology hardware are easy to use and provide the opportunities to measure results when incorporated into developing and delivering marketing, advertising, digital architecture and digital design services. The last characteristic of measurability is specifically related to cost control involved in projects, for which mobile technology is deployed. This is because the technical nature of mobile devices allows for the automatic calculation of returns on investment allocated to a particular project.

In addition to mobile technology hardware all 28 firms that deploy mobile technology purchase and possess mobile technology software, which includes mobile applications or widgets developed or used in processes along with any software programs essential to developing mobile-specific content and services. Once again, cost effectiveness is one of the key characteristics, stressed by the majority (19 interviewees out of 28) interviewees whose firms that deploy mobile technology, when describing mobile

technology software. Interviewees 16 states that "*most mobile apps are free anyway*", but their firms allocate funds to purchase a particular application:

> *"My boss just recently approved purchasing a mobile app for the whole team. This app allows creating documents in different formats, sharing files through Dropbox and email, and it has quite a user-friendly interface and features to use on a device with a small screen."* [I18]

Mobile technology hardware and software are used primarily on an operational level. Respondents from firms 11, 12, 13 and 23 specifically emphasise the role of MTI as an "*operational tool*" [I11; I12] used "*to perform usual business activities like communicating, exchanging information and contacting clients via voice, email or text*" [I23] and "*to maintain operational work productivity, efficiency and flexibility*" [I13]. Emphasising the distinctive nature of mobile technology, the managing director from firm 30 adds "*mobile technology is about productivity and efficiency irrespective of where you are.*"

Having said that, MTI has been consistently presented as a strategically important aspect of organisational decision-making across all studied firms deploying mobile technology. Strategic value comes from the various advantages that mobile technology deployment creates for firms and their clients:

> *"Strategically, mobile technology can be utilised to improve and start communications with consumers in a way that non-mobile technologies never could, so from that perspective you can allow people to engage wherever they are, and again it comes back to that ability to have access to the information, or to the contact, or whatever you need, wherever you are."* [I21]

Moreover, interviewees reveal that ways of accessing MTI resources, as well as decisions to invest in MTI, can change the strategic organisational and business model of a firm entirely. Thus, the managing director from firm 3 felt strongly that their company transformed *"software in-house within the last two years"* to keep up with the pace of technological changes across the business world. Firm 3 in particular focuses on building its own MTI by developing in-house mobile applications and software programs and also by purchasing innovative hardware. Other firms, such as firms 6, 8

and 10, prefer to acquire free MTI or endeavour to develop strategic collaborations in order to gain access to scarce MTI resources. Interviewee 6 claims that her firm "*employs and partners with companies*" to work on projects, which involve deploying mobile technology. Alternatively, some firms, such as firms 1, 5, 7 and 17, prefer to focus particularly on investing in mobile technology software.

5.3.1.2. Organisational culture

The results of the exploratory study demonstrate that having tangible mobile technology resources in the form of MTI is not sufficient to maximise the use of mobile technology to its full potential. A complementary organisational system of beliefs and behavioural norms is found to facilitate and guide mobile technology deployment as well as having a particular MTI investment strategy, which was discussed in the previous subsection. Interviewees whose firms extensively deploy mobile technology identify a number of behavioural orientations and settings that accompany mobile technology deployment (see Table 21 overleaf). The four interrelated orientations - continuous learning, technology embracing, focusing on clients' needs and the flexible and adaptive process of creative thinking and responding to the external environment – form an overall organisational culture that underpins mobile technology deployment.

Table 21. Organisational culture and its elements: an empirical illustration

Type of Organisational Culture	Empirical Definition	Illustrative Quotations
Learning orientation	Tendency of the firm to continuously create and use knowledge	*"Right now at this point, self-education and continuous learning are what seem sufficient to my company and what actually drive employees to be creative and constantly create new things."* [I9] *"As a collective there will always be enough people wanting to drive and learn, which will keep that as a forward movement. So, I think it is inevitable that learning, change and development will continue forever. This is something what my firm advocates."* [I7]
Technological orientation	Organisational orientation to embrace technology by sensing and seizing technological opportunities	*"Not everybody in my organisation is as technically passionate as me, but they would have some passion for technology because they would not be attracted to working in my firm otherwise. I think that is natural in each area."* [I7] *"I think everyone who I work with does actually have love for technology. They do utilise technology. They all remotely work when they need to. They are utilising mobile technology and try to bring this experience to products we offer to our clients."* [I13]
Client orientation	Propensity to be responsive and proactive in satisfying clients' needs	*"Clients usually come to us with a thing that they want, like 'I want a logo or I want a website, I want a mobile app', and really that is the foundation levels and we build upon that with creative thinking."* [I17] *"I think it would very much come down to the requirements of the project. Generally, every*

Type of Organisational Culture	Empirical Definition	Illustrative Quotations
		project is bespoke. The way that we would build a team to service that particular project is to sit down and look at the project, [and then ask] what are the requirements, and what professional resource help or additional resource will we need to deliver that better than anyone else?" [I21]
Adhocracy	Project management structure based on flexibility and adaptive creative thinking	*"The key is flexibility and adaptability to be able to respond accordingly to client needs and to apply existing processes, modify them and even sometimes completely introduce new mechanisms."* [I5] *"We are very flexible, most flexible in terms of coordinating and managing projects, because we can demonstrate that we can come up with an idea in the morning and execute it in the afternoon"* [I23] *"The culture in our agency is flexible and open. We all communicate and share ideas all the time."* [I27]

Learning orientation

Interviewees from all 28 firms deploying mobile technology cite "*learning culture as a key*" [I8; I31], significant aspect of mobile technology deployment, by linking it to the exploration of opportunities made possible by mobile technology deployment and how this technology can be potentially utilised. Learning implies, firstly, the principle of sharing knowledge across an organisation. Interviewee 13 states that having informal meetings and idea generation sessions helps in sharing experience and skills and identifying gaps in the organisational knowledge base.

On one hand, organisational commitment (the extent of embracing learning orientation) to learning helps with sensing and analysing opportunities:

> *"If something comes up, we as a team look at it and decide whether it is something interesting and relevant for us to implement. This speeds up the process of implementing new ideas."* [I14]

On the other hand, learning orientation is predominantly associated with individuals and the personalities of people working in firms who have ability to influence the behaviour of others and lead the mobile technology deployment process. The firms in this study are mostly small in size, where the owner leads and influences individuals across the firm and strengthens their commitment to learn about new trends:

> *"I am ahead of the curve, if I am familiar with new technologies because I do learn about it and read a lot about it…. I do believe that others are influenced by my passion for technology and learning about new things."* [I9]

In fact, learning orientation could be linked to entrepreneurial orientation where the owner of a business who is prone to risk-taking and innovation develops a mirror-like organisational culture of innovation, experimentation and risk-taking. However, in this thesis, the findings illustrate that some individuals who do not own or manage a firm have a leading role in establishing a learning culture, which encourages employees to grasp and accumulate new knowledge about technology and its use. For instance, the strategic director from firm 21 who states:

> *"As individuals now, I think it is kind of essential to stay current, keep on learning, keep on staying interested in the subject and in the projects and the industry that you are in. This is how we all influence each other in the advertising and marketing business. We all learn, learn and learn. Otherwise, you very quickly become obsolete… Learning about technologies and embracing mobile technology probably is more geared to my specific role and the roles of a few key individuals within the company."* [I21]

Moreover, the nature of learning is continuous, because, according to the managing director of firm 22, *"the continuous and evolving nature of mobile technology requires continuously evolving your knowledge rather than learning a whole new trade."*

Learning activities are in place in all 28 firms that deploy mobile technology internally, within their organisational processes, as well as for servicing clients. Interviewees from 28 firms identified two ways of facilitating learning:

> (1) *In-house*, through reading publicly available sources, scanning the competition and sharing expertise within the firm, "continuously learn and read about things… follow blogs and TV programmes about technology." [I25]
>
> (2) *Externally*, through attending additional training programmes, courses and networking events, "attending events, professional events, networking events, courses and seminars, which are identified for us to go to." [I12]

Technological orientation

As the data illustrate from the above subsection, in the endeavour to deploy mobile technology successfully, interviewed firms embrace learning orientations primarily as a way of understanding and analysing technological trends and exploring ways of exploiting mobile technology. Moreover, the contextual analysis of mobile technology deployment (see previous section 5.2.) highlights that "*technologies are developing very quickly*" [I1], which subsequently triggers the adoption and deployment of mobile technology. As the strategic manager from firm 1 states, "*people who are not keeping up with technological evolution are missing out.*" Hence, the fact that embracing technology is embedded within organisational culture of 15 firms, which extensively deploy mobile technology, is not surprising.

Technological orientation is a foundation of individual attitudes towards embracing technology (the extent of embracing technological orientation) and seeing the value and potential in integrating technology into processes and services. Interviewee 28 stresses:

> *"Sticking to technological advancements and being ahead of the game really got into our heads, our style of working. In this company we all tend to embrace the latest technological solutions and we all share what is out there and how can we take this on to a next level. We are challenging each other in a team and our expertise and knowledge evolves as a result of this."*

Learning orientation is seen as a prerequisite to embracing technology and to building substantial technological knowledge. This is particularly true for firms that emphasis importance of the individual level learning orientation (the extent of embracing learning orientation). Moreover, the built technological knowledge is not forgotten but is rather exploited in processes.

Some firms (15 out 28 firms which extensively deploy mobile technology) consider mobile and other digital technology as a primary input in the formation of organisational strategy. For instance, such firms restructure their business models by developing new departments and teams whose responsibilities are to scan for the latest technological trends and experiment with further innovative ways of using digital technology:

> *"We have an S&T division where we have specifically developed a specialist digital mobile team – and it is growing and growing… The digital side is growing all the time, with mobile obviously being a serious part of that."* [I3]

Client orientation

All firms interviewed in this study employ project-oriented processes where resource allocation, skills requirements and outcome specifications depend on each client's objectives and needs. The twenty-five firms (except firms 20, 22 and 24) that deploy mobile technology also place emphasis on clients' requirements and then sell them bespoke solutions. These firms prioritise and engage in responding to customers' current needs but see clients' objectives and constraints as limitations to creative thinking. According to interviewees 25 and 12, most of the projects "*are guided by clients' budgets*" [I25] and "*the whole process is based on clients' requirements, which are objectives for us to achieve so that we all are very clear in terms of what we are doing*" [I12]. "*Some companies already come to me with the content in mind that they want, so it makes my work a lot easier*," adds interviewee 25.

However, clients sometimes drive the exploratory process through "*business goals, which sometimes are absolutely inappropriate and beyond digital transit and expertise we have in our company*" [I18]. Therefore, clients might initiate mobile technology deployment or take it further by asking, for instance, to develop a mobile solution.

Firms 1 and 7 had both started work on developing mobile applications as a result of requests from their clients. Firm 1 was asked to develop a mobile application as a branding tool and platform to incorporate responsive advertising, while a local taxi company asked firm 7 to develop a mobile app to support and automate operational processes of their business.

Some firms (3, 12, 13, 14, 16, 18, 21, 28), which deploy mobile technology, anticipate emerging and unarticulated latent customer needs as a result of active learning about new technological trends. Hence, proactive client orientation (the mode of embracing client orientation) is also an element of organisational culture, which deploys mobile technology in innovative ways. Additionally, eight interviewees listed in the first sentence of this paragraph state that sometimes clients can be involved in co-creating solutions by participating in idea generation and attending brainstorming sessions, "*to try to drive ideas and get inspiration*" [I16].

Adhocracy

Due to their nature, as discussed in section 5.2., mobile technology categories imply flexibility, due to the location and time independence of organisational processes. Nevertheless, in order to deploy mobile technology, firms need to remain adaptive to external environments ("*be open to adapt to surroundings, change with the landscape, not change completely, but adapt, be flexible, keep balance*" [I1]) as well as experiment with and explore new ideas. Eighteen firms (1, 3-5, 7, 12-14, 16-19, 21, 25, 27-30), which deploy mobile technology extensively, stress that mobile technology deployment makes the process of creative thinking adaptive and enables reactive and proactive (the mode of embracing adhocracy) responses to the external environment.

5.3.1.3. Mobile technology skills and expertise essential to deploying mobile technology

Two types of resources shape a firm's human capital, which is essential to mobile technology deployment. In this subsection the author discusses the first type,, which is mobile technology skills and expertise. All 28 firms which deploy mobile technology to a greater or lesser extent, place emphasis on organisational expertise and skills renewal, in order to deploy mobile technology (see Table 22 overleaf).

Table 22. Empirical illustration and definition of mobile technology skills

Type of Mobile Technology Resource	Empirical Definition	Illustrative Quotations
Mobile technology skills	Skills, expertise and competencies of personnel to deploy mobile technology, comprising technical knowledge and technology integration skills	*"We have got the capability in-house to program applications, provide mobile versions of websites that we program… our programmers have developed applications for other purposes."* [I10] *"We do not do any specific training for it.... We do so much digital work so we kind of developed it throughout."* [I14]

Firstly, mobile technology skills comprise technical knowledge that can be used to develop mobile technology hardware and software:

> *"We have people with completely different skill sets now…We have two people who specialise in mobile apps, for instance. Then, we have new media director who looks at mobile strategy, digital strategy."* [I3]

Secondly, mobile technology skills include technology integration knowledge, expertise and competencies possessed by any individual, even if their job does not involve the more technical aspects of coding or programing:

> *"Our technical designers obviously know about mobile coding and programming. But some creative guys who work with clients and on the visualisation of ideas understand coding and mobile websites' and apps' programing because it brings a sense of reality to what is possible and what is not."* [I21]

Mostly, all 28 interviewees claim to have individuals who develop ideas, and technical designers who materialise these ideas. As interviewee 19 highlights, *"to build mobile solutions creative and technical guys work together to understand each other's points of view and to bounce knowledge off each other."*

Consistency across answers from all 28 interviewees whose firms deploy mobile technology shows that learning orientation underpins the internal acquisition of new and

the renewal of existing technical and technological integration knowledge and expertise. Internal learning and sharing knowledge within the firm normally form tacit knowledge. However, technical knowledge about mobile technology is mainly explicit, because in most cases, whether by reading blogs and newspapers or by talking to industry leaders, the knowledge and expertise required deploying mobile technology are sourced externally. Thus, attending additional training sessions, external expos and industry networking events dedicated to understanding mobile technology and its specific use enables firms to extend their technical knowledge base.

However, unique ways of sharing technical knowledge and exploring ways to integrate technology into solutions reside within firms and form overall systems of skills, expertise and competencies that mean that firms have to deploy mobile technology in an innovative and a unique way. The learning by doing practice is stated to be one of such knowledge integration practices, which implies the development of new mobile technology skills when working on a project that involves mobile technology deployment. Technical designers from firm 7, for instance, had to learn to program mobile applications the first time their client, the local taxi company, came up with a request to develop a mobile application. Hence, experience triggered by client needs (client orientation) adds to mobile technology skills.

5.3.1.4. Business networks and relationships

Two types of resources shape a firm's human capital, which is essential to mobile technology deployment. First, mobile technology skills and expertise represent an intangible knowledge base, which can be used to create mobile technology infrastructure. Second, interviewees equate the value of social relationships, both within and outside the firm, to the successful acquisition and use of MTI, mobile technology skills and to shaping organisational culture.

According to 16 interviewees (I1, I4, I7-I12, I14, I17-I21, I27, I31), business networks and relationships represent the second type of mobile technology that form a firm's human capital, which is critical element in deploying mobile technology, because infrastructure that is commonly available and skills explicit in nature are acquired through either internal social ties within an organisation or external business and social networks that provide access to missing or scarce mobile technology resources (see

Table 23). Hence, business networks and relationships are unique to each firm, providing that they do not disclose the ways in which and with whom they exchange and share knowledge.

Table 23. Relational resources involved in mobile technology deployment and its elements

Type of Relationship	Empirical Definition	Illustrative Quotations
Internal	Internal social relationships and mechanisms of sharing insights on mobile technology deployment within the firm	*"Mobile technology definitely plays an important role within this sharing information activity, because essentially it is another platform for you to share information. If I am on my way to work, I see my boss has passed an article from the magazine about a new digital campaign. I see it and I read it and tweet it. It is another way to put it out there and to get it in. You are always connected. If you are travelling, you always pick something that is relevant to your work and you are always available for others to interact with you and see your point of view on the progress of the project."* [I14] *"We have framing sessions, whereby we would sit around a table, discuss the project, see what the scope of the project will be, and at that point we would decide who would be best to respond to that project, and also if we need any additional resource… On top of that we have organic meetings throughout the week where we would sit down and just have a general chat about things that were specifically pertinent or interesting at the time… We share new ideas about mobile technologies, new apps someone's bought or a new mobile ad some firm's created."* [I21]

Type of Relationship	Empirical Definition	Illustrative Quotations
External	Network of external firms, individuals that provide access to valuable mobile technology resources	*"I am constantly out to look for potential clients and people to work with."* [I31] *"We have not yet got involved in developing directly any apps. We have actually passed some clients on to specific app developers. We felt their skills were higher than ours, so we just passed them on. These app developers pass clients on to us. It is win-win really."* [I27]

Informal sessions of exchanging ideas and experience with mobile technology take place in all 16 firms. Some firms, however, formalise such sessions and call them 'framing sessions' in firm 21, or 'ideation stage' in firm 12. Moreover, MTI is used as a tool or mechanism to facilitate knowledge exchange and sharing.

On the other hand, outlined by 12 (I1, I4, I7-I11, I17-I20, I27, I31) out of 16 interviewees emphasising business relationships and network, the external social ties help to span mobile technology knowledge and skills gaps by providing access to resources that can be used when solving problems on an ad hoc basis:

> *"When there is a challenge from a client to do something really different (that is not always the case), I just contact developers and designers from other firms and ask if it is possible to do."* [I31]

In 12 firms listed in the previous paragraph forming external business relationships is found to be part of learning orientation that all 28 firms deploying mobile technology have established. Moreover, interviewees from these 12 firms claim that the creative sector is a network of SMEs with different skill sets. Therefore, working in partnerships, and *"setting up strategic partnerships"* [I11] is a common practice:

> *"I do not have a small business where there might be ten designers, a photographer or an illustrator. We do not need all of that, but what I do need are people I trust who I bring in to work on projects and pay them for the work. It is a more efficient way of working, a more flexible way of working. Let's take*

one of our strategic alliances with a new media company specifically providing Web or interactive services. I would call them to deliver on the sort of technical delivery or something." [I11]

5.3.1.5. Summary

To sum up the discussion on the mobile technology resources category, all four types of mobile technology resources are interrelated and deployed in combination by 28 firms deploying mobile technology. However, the frequency and consistency analysis, which is the comparative analysis of a number of interview transcripts wherein the concepts/sub-categories (covered and discussed in this subsection, 5.3.1.) were detected, illustrates the diversity in practices across 28 firms deploying mobile technology. Moreover, this study finds that mobile technology resources gain value, not only when deployed by firms to create opportunities and innovative solutions to client problems but also in the ways firms acquire, transform and combine MTI, organisational culture, mobile technology skills, and business relationships and networks. The acquisition, deployment and leveraging of mobile technology resources, is, therefore, potentially constitute a firm's unique mobile technology capabilities.

5.3.2. How are mobile technology resources deployed? The process in focus: Activities

It has been highlighted by existing research (Jones et al. 2014a; Zahra et al. 2006) that organisational capabilities are unique in their nature and reside within organisational processes, decision-making routines, dynamics within creative teams and the overall strategic thinking of a firm when the integration and reconfiguration of resources take place. That said, in order to understand, explore and identify capabilities practiced by firms when deploying mobile technology, there is a need to take a closer look at the organisational process in this respect. The following two sub-sections (5.3.2 and 5.3.3.) focus on activities and decision-making routines. To begin with, collectively, 28 interviewees, whose firms deploy mobile technology, distinguish five types of activities (Table 24) that involve the deployment of mobile technology resources and, hence, exercise mobile technology capabilities. These five activities (sub-categories) are discussed further. Consistency amongst the responses regarding these five sub-categories of mobile technology deployment activities is presented in Table 24 under the column entitled 'Sources'.

Table 24. Set of activities comprising the mobile technology deployment process

Type of the Mobile Technology Deployment Activities - Subcategories	**Sources***
Communicating	27
Using mobile social media	17
Developing mobile services and content	26
Delivering services and products via mobile technology	28
Managing projects on the go	28

*Number of sources/interview transcripts wherein the concept(s) was/were detected

5.3.2.1. Communicating

Mobile technology, as discussed in the earlier section 5.2., represents interactive technology, which primarily aims at communication and exchanging information anywhere, anytime on the go. Hence, the fact that communication, according to 27 out of 28 firms (excluding firm 22) deploying mobile technology, represents a core activity in the deployment of MTI is not surprising: "*Mobile technologies are primarily communication tools for us"* [I16].

The strategic manager from firm 1 adds to this, by saying *"the ability to be fully communicative through online purposes and through mobile technology is key to creative business."* Interviewee 6 states that some roles, which involve remote work, particularly require a quick response and *"information at the fingertips"* to run projects smoothly and effectively. She stresses:

> *"Communication, I think, is one of the most important areas, especially with our sales team. Often, being in London and going for meetings to other places, you still are getting briefs coming in about jobs that need to be done. So, the sales team is able to get emails on mobile phones and is also able to go to a coffee shop and use Wi-Fi. They can work on things like a laptop for things that cannot be done on a mobile phone. That is a huge help, I mean that is really, really important for us."*

Communication using mobile technology is applied to manage both the internal and external flow and exchange of information (see Table 25).

Table 25. Communication activities through the deployment of mobile technology: an empirical illustration

Communication activities when deploying mobile technology	Illustrative Quotations	Sources*
Internal communication	*"We employees are all always available via emails on mobiles."* [I10] *"We utilise mobile technology in processes for communicating internally and exchanging emails."* [I30]	21
Managing external relationships	*"I do use my smartphone for getting emails, taking phone calls, scheduling my calendar and appointments and obviously social media, which are critical elements of the business in terms of interaction and communication with clients, potential and existing, and obviously branding my own business, my own persona… We use mobile technology to maintain relationships with partners and clients mainly."* [I11] *"I use mobile technologies for networking... Mobile gives you the ability to react to things quickly."* [I19]	27

*Number of sources/interview transcripts wherein the concept(s) was/were detected

Internal communication is critical to maintaining efficiency within processes and projects, at least based on what interviewees 10, 12 and 18 say. Mobile devices help to connect key individuals involved in a particular task anytime, anywhere. The business development manager from firm 10 emphasises that "*if someone is not at the office, we've all got smartphones, so everybody can speak with one another.*"

Internal communication is maintained through all mobile technology categories, mobile devices, mobile networks and mobile applications. Moreover, communication is maintained in various formats, such as face-to-face through synchronous environments

(Skype application) and text (emails, instant text applications). This enables flexibility and enriches information exchange among individuals:

> *"We are not finding a problem in communicating, no matter where any of us are located. We tend not to use too much mobile technology in terms of voice. We tend to use instant messaging, i-messaging on Apple devices, Skype. We use these applications on our laptops, even if we are in the office. You work in an environment where other people are working. This is why we tend to communicate with each other through text."* [I13]

Moreover, continuous interaction is key to interviewed firms that invest in purchasing mobile hardware and making it as efficient as possible to use by employees. The managing director of firm 23 explains:

> *"From a business point of view, we need to be contactable through working business hours. Therefore, in terms of the actual mobile hardware, we have all the phone options covered. We have voicemail set up. With company staff mobiles, we have very simple pay-as-you go phones, which all members have and they have a direct dial that is given to all clients that we work with regularly."*

Hence, decisions related to MTI are critical in maintaining effective communication through mobile technology.

"The second area is… keeping in touch with communities, individuals or businesses" [I19] and using *"mobile devices and social media via mobiles to be in touch with clients and seek new clients"* [I19]. Interviewee 13 adds that being continuously accessible to interaction has implications for clients' expectations *"to get through to"* their firms at any time. Mobile technology is considered a *"big communication tool, your contact sphere"* [I13] that allows users to maintain and manage communication continuously *"rather than just having 'isolated pockets' of working office hours"* [I8] leading to efficiency: *"I have saved the whole week just by being mobile"* [I8].

External communication is also conducted through various mobile technology categories and in different formats. Interestingly, all 27 interviewees, who mentioned communicating as one of the main activities as part of mobile technology deployment,

stress the importance of mobile technology in communicating externally. The following interviewees who did emphasis external communication (I5, I8. I11, 16, I19, I20) did not discuss internal communication as part of mobile technology deployment.

So, altogether, mobile technology is perceived as *"another mean to engage with people"* with *"a few extra channels available to contact people"* [I1]. Thus, organisational communication is transformed as a result of deploying mobile technology in terms of possibilities of being quick to respond, efficient in channelling information and diverse in ways of communicating.

Although firms 2, 15 and 26 do not deploy mobile technology for business activities, they do agree that it facilitates "*constant connectivity and instantly being accessible for communication with everyone*" [I26]. However, interviewee 2 states that "*such a 24-hour commitment to business is not something I am excited about.*" The managing director of firm 15 adds "*personally, I would rather go somewhere, leave my mobile phone in a drawer and not be contactable. I do not mix personal with business.*"

5.3.2.2. Using mobile social media

Social media channels have already been mentioned while discussing communication activity, demonstrating that social media sites are accessed via mobile devices as communication channels to manage both internal and external relationships. Even firm 26, which does not deploy mobile technology for business purposes, claims to track mobile social media consumption patterns for analysing market. In addition, this study finds that 17 firms out of the 28 (1, 3-8, 10, 12-14, 17, 19-20, 24-25, 28, 31) which deploy mobile technology extensively in their processes use mobile technology as a platform to understand mobile social media consumption, to reinforce the strategic position of a firm (see Table 26). The managing director in firm 17 argues:

> *"Companies that do not engage in social media, both in terms of how their company functions and in terms of designing for it, are the ones who are going to be left behind."*

Table 26. Empirical illustration of activities when using mobile social media

Using mobile social media - activity	Illustrative Quotations	Sources*
Market sensing • Researching market • Tracking competition	*"We use social media on the go. It is the research platform that allows us to track contextual dimensions, time and location. It is critical for us, because so-called mobile social media adds extra value to our data, to our end-user profile. That brings the targeting up to a different level."* [I7] *"For example, in a social media side of things, a lot of time and effort have to go into finding out what is the best audience for your message and where and how they consume their media… Mostly it is through mobile, so we as a firm do the same in order to understand the consumption patterns."* [I10]	17 13
Managing relationships	*"Now you have to find new ways of engaging with potential clients. So, how do I engage with them? I engage with them through social media, I set up the social media site. I track them to that site. They begin to read and like what I've said. I then will pick from my statistics or my social media site that you are visiting my site. I then pick up your IP address. I then contact you through your email, saying: "I've noticed that you have been visiting our website and having a look to a certain product. Can I come and talk to you about it?" But I send you an email. And I am sending you an email not from my office or from my client's office but from the lounge in a hotel. Mobile technology allows me to do that."* [I8]	17

Using mobile social media - activity	**Illustrative Quotations**	**Sources***
Branding	*"We also are trying to increase our tweets so that we are getting a regular amount of news out there. It just makes people aware of what we are doing and creates a bit of personality… Our designers, for instance, get inspiration from real-life situations, take photos and instantly upload these pictures on our Twitter page through their cell phones." [I6]* *"We've got a CHS Facebook page, we upload any charity events, any updated news. PR events are uploaded in the office mostly, but various news items are always instant. As an example, when I have negotiated a new deal with a client, I will post this on Facebook through my iPad."* [I24]	17
Developing content	*"With Facebook and Twitter, and things like that, I mean these are things that people tend to look at on the go. All the time they are constantly checking; that's a constant 'bib' on your phone with new message. Therefore, I do push clients in that direction and I think it's important for them to be covered... Regarding Twitter, it's not something that I do. It's something that I am working on to get into. We are redesigning our websites and things like this. I recommended it to so many clients and it worked."* [I4] *"We can do a Twitter page and do a Twitter profile; in fact, we do for one of our clients, we look after a Twitter page for them."* [I20]	17

*Number of sources/interview transcripts wherein the concept(s) was/were detected

The business owner from firm 8, who started his business 15 years ago, supports this view:

> *"With mobile technology I use a lot of what I call business media as opposed to social media. Social media – Twitter, Facebook for social purposes, then Twitter, Facebook – for business purposes; such a division helps me to divide my orientation and the ways I apply social media for personal interactions and business."*

He describes the main purpose behind deploying mobile devices in his firm. Due to the specialised nature of the services his firm provides, he needs to pick up continuously on the latest technological trends and then incorporate them into his firm's operations and offerings to clients. Although social media is primarily related to the B2C context, he admits that B2B firms should not neglect this medium and that they should deploy it strategically to their own advantage as well as to the benefit of customers.

Overall, firms that deploy mobile technology see mobile social media as a strategically important element to embrace and incorporate into their practices. A small business owner and the creative director of firm 7 claims:

> *"I do access social media in most cases on the go... I have a personal account on social media; I have business accounts as well. I always stress the importance of social media… My clients' customers do it, so you should be proactive in understanding this tool to create value for your business client."*

Seventeen firms that use mobile social media see the strategic value of mobile social media to performance. The strategic director from firm 1 particularly argues that mobile social media is "*a creative tool with measurable means*," allowing firms to assess returns on investment in marketing campaigns. To illustrate this point, the managing director from firm 13 talks about the project his organisation has worked on, namely the promotion and co-ordination of the classical music festival Serenata. Sixty per cent of ticket sales for the event have been made through social media sites, from which thirty-eight per cent of visitors accessed social media and paid via mobile devices. Using mobile social media on the day of the event itself, firm 13 followed up with promotional

activities and obtained visitor feedback about the effectiveness of the marketing campaign. Overall, the managing director from firm 9 says:

> *"Social media 'on the go' helps to us to justify campaigns, measure campaigns and know where we are positioned, but also to amend things and know what can be done in the future."*

Seventeen firms that use mobile social media indicate that mobile social media is used for four purposes: market sensing, managing relationships, branding and developing content (see Table 20). All 17 firms use mobile social media to sense the market, in order to learn about potential business clients and customers who are the ultimate target in value proposition: "*[we] use it as a research platform for behaviour*" [I10].

Mobile social media, in particular, helps firms to understand the consumption of social media in which time and location dimensions come into place. The results illustrate that mobile social media helps creative service firms engage in 'localised' interaction with the end-users of social media sites, and based on any knowledge obtained they offer "*really targeted value proposition to our business clients,*" as claimed by interviewee 1. The strategic manager from firm 1 highlights that location- and time-specific information is mainly demanded by their bricks-and-mortar retailing clients, in order to provide a real-time service through the immediate reaction and response to customers' requests. In addition to sensing the demand side of the market, mobile social media is used to understand and "*track what our competitors are doing*" [I6]. The interview accounts show that firms that use mobile social media keep records on the best practices of direct and indirect competitors.

Mobile social media is used to manage relationships (consistent references among all 17 interviewees who use mobile social media), which is considered a critical practice particularly in the mobile context, because opportunities to access social media anywhere and at any time lead to flexibility and efficiency in the communication process. The business owner from firm 8 claims that social media in general allows him to engage promptly in a conversation with potential clients: "*If somebody tweets something about my company or about me, I can see that quickly, which means that I can respond quickly.*" Interviewee 31 adds that mobile social media is an effective channel for internal communication within the firm:

"The Facebook app, Twitter app, LinkedIn on my phone and iPad are pretty much the touch point, my contact info. We communicate in a company through Facebook. It is quicker, as you are always connected to it."

Nevertheless, social media is mainly considered to be a branding tool which businesses use to promote their products and services via a profile page as well as the personal pages of owners and employees. The managing director at firm 28 says:

"Social media nowadays is probably the most successful form of online advertising... Everyone has pages on Facebook. I can get one for free… Then in the description you put branding information. It is such a powerful branding tool, and it's free of cost in most of the cases."

Seventeen firms that use mobile social media understand the importance of intertwining a brand's mobile social media strategy with the personal social media strategy of the business owner, particularly in a small business context. Interviewee 10 says:

"I have a personal account on social media and I have business accounts. It is critical to represent my company and myself as one brand. My employees, to be honest, do the same."

Lastly, the 17 firms mentioned above develop and design content for mobile social media:

"We can do a Twitter page and do a Twitter profile." [I24]

"In terms of social media that is used on the go, I do develop and maintain Twitter pages for our clients." [I31]

Today, developing content for mobile social media is a strategically important function for firms delivering marketing, advertising, digital architecture and digital design services, because it is a profit-generating activity. Mobile social media content development is becoming a core service, and digital firms should provide it in order to compete in the marketplace.

5.3.2.3. Developing mobile services and content

Apart from content for mobile social media, interviewed firms not only develop and sell different mobile content such as mobile applications or mobile advertising, but they also integrate mobile elements into existing communication and branding services offered to clients (see Table 27 overleaf). Twenty-five firms out of 28, deploying mobile technology, claim to integrate mobile content into existing services and products and 23 firms – develop mobile content.

Firms, which develop mobile content, consider this type of service or product as innovation, because it has been recently introduced by their clients. Interviewee 20 states "*we were just recently asked to produce a mobile app; it happened for the first time, but we are planning to go further with this.*" Interviewee 10 stresses that "*the demand for mobile applications or specific mobile websites from clients is quite low.*"

On the other hand, the business owner of firm 19 predicts that *"the explosion of applications will take place any time soon,"* remarking that *"mobile applications that are useful, that enhance the customer experience and are not just a gimmick, are going to be the ones that survive."* Thus, some firms are in the development phase of producing their first purely mobile content, and perhaps in doing so they will contribute to the explosion of applications and other purely mobile services. The business owner and creative director of firm 4 says that one of their main clients is a local coffee shop brand, for whom they *"have an idea of creating an iPhone application which can find the street locations of coffee shops and direct people to them."* Interviewee 4 claims that *"the mobile application is a new touch point to engage with our clients' customers and a new way of representing a brand as fun, cool and trendy."*

Moreover, 25 interviewees mentioned integration of mobile elements into existing communication and branding solutions (for instance, QR [Quick response] codes available on print advertising, which allows people to access further information on a product or promotion through their mobile device) in their firms:

> *"We have got now much more QR code activities. You know the code, which is located on your mobile; you can scan it and get the pictures while you are driving through. I think we will see a lot more of that as the industry grows."* [I14]

Table 27. Purposes of developing mobile services and content through the deployment of mobile technology: an empirical illustration

Developing mobile services and content - activity	Illustrative Quotations	Sources*
Developing mobile content	*"I developed a number of applications for the use on mobile devices, specifically iPhones, in order to communicate with a particular type of audience, such as iPhone apps. We did develop a game, which was promoting particular events. Due to the boom popularity of iTunes, there are really addictive games which get people playing and interested. People get hooked to it. It is fun. We have also developed the game, which got people addicted to it, but the whole game was based around an activity within the event which our company was promoting. We have got people interested in a game first, hooked on a game and realising what the game is about with branding information within it for the particular event."* [I1] *"We have just finished a project, which is a specific mobile-based consumer-interactive program, which is going to tie in with TV – and that is going global."* [I11]	23
Integrating mobile content into existing service and product	*"In terms of using mobile technology for projects, I do QR codes, text message marketing integrated into what I offer to clients. For instance, having advertising designed websites but also add in QR code to it." [*I25] *"Predominantly we are producing mobile versions of websites. I would be lying if I said we had done many. A lot of the Web work we do has not justified creating a separate mobile version. I have currently two sites in build at the moment, which will have mobile versions."* [I27]	25

*Number of sources/interview transcripts wherein the concept(s) was/were detected

Interviewee 12 sees mobile technology as *"a tool… to be embraced as an integrated part of the overall solution for clients,"* because mobile technology is an *"additional touch point to target a different audience, primarily youngsters who are always on their phones checking Facebook, texting to friends, taking photos."*

Having said that, deploying mobile technology as part of a new service development project, whether in the initial stage of understanding or the advanced stages of producing innovative mobile solutions, boosts creativity ("*mobile technology allows us to be creative*" [I17]), stimulates innovative practices ("*we came up with an initial idea for a mobile app at an informal gathering at the pub and took it further through formal brainstorming with clients and partners, experimenting with designers and programmers and introduced something bold to the market*" [I14]) and learn from failures and successes to develop their business further ("*It has been trial and error so far with developing the mobile apps. An app that we developed for INN is the first one to succeed. We learned a lot from playing with different features and ideas*" [I14]).

5.3.2.4. Delivering services and products via mobile technology

It has been stated in previous sections that mobile technology is another communication channel, or tool. Hence, all 28 interviewees whose firms deploy mobile technology believe that the best way to integrate mobile technology into their existing portfolio of services or products is by delivering existing messages and content through additional channels, i.e. mobile technology categories (see Table 28).

Table 28. Delivering services and products via mobile technology: an empirical illustration

Mobile technology deployment activity	**Illustrative Quotations**	**Sources***
Delivering services and products via mobile technology	*"Streaming adverts to mobile phones is quite interesting with the GPS positioning advertising."* [I9] *"We do have QR code on our website that allows easy access for clients who look up our information on these small mobile devices."* [I30]	28

*Number of sources/interview transcripts wherein the concept(s) was/were detected

According to those interviewees who deploy mobile technology, delivering services and products via this means does not imply the recreation of content or messages but the "*optimised delivery of existing messages or content through mobile devices*" [I4]. As an example, the interviewees mostly refer to the development and design of websites. Thinking about adding a new channel as a way of accessing websites has made creative service providers reconsider the overall design of conventional websites accessed through fixed networks and stationary desktop computers to "*work on all formats, mobile devices, Macs, PCs, with all sorts of browsers with all the functions that would work on a smartphone*" [I22]. The managing director from firm 9 adds:

> *"Clients know about mobile phones. Sometimes they mention, 'we want a website but it also needs to be displayed properly on a mobile phone'. However, they do not really think about what they want their mobile website to do. It is only when you sit down with them that they suddenly realise that they probably have not necessarily thought it through, i.e. what they are trying to do with it."*

Hence, learning and researching are also central to deploying mobile technology as a content delivery platform:

> *"Understanding why clients want to have a mobile version of a website is for us part of learning about what clients want to do with their business, learning about their needs, what they want to address through mobile technology." [I9]*

The same way of thinking is relevant to social media content that is developed with the idea that it will be consumed on a large-screen device but should be perfectly readable on mobile devices, too:

> *"I am designing a Facebook campaign with another company. So even today I am thinking, 'Well, it has to work on mobiles!'"* [I22]

For some firms like firm 28, delivering services and products through mobile technology has been set on fire by the development of a new product, touch screen websites:

> *"We do touch websites now – and they are special. Our clients came up with such a request and we did it, and now we are trying to sell this to other*

companies. Responsive design that we implement right now is good for any mobile website, but this solution is even better for touch screens."

Hence, experimentation and ideation is also present in delivering services and products via mobile technology.

5.3.2.5. Managing projects on the go

The previously discussed four activities (subsections 5.3.2.1.–5.3.2.4.) represent existing activities that are transformed through the deployment of mobile technology. Communication, the use of mobile social media as part of communication and marketing, mobile content and service development and finally the delivery of services and products via mobile technology are all common processes that take place in almost any type of business. As stated above, mobile technology helps to improve these activities incrementally (flexible communication, extra channel for delivering services) or even radically (pure mobile content).

However, one of the activities highlighted by all 28 interviewees whose firms deploy mobile technology particularly reflects its presence as a result of its distinctive features discussed in section 5.2. Managing projects on the go means the chance to work on, monitor and make decisions related to projects while away from office setting and on the move, irrespective of time and location.

As outlined in Chapter 4, project management is a process setting that all 31 firms apply to organise and run their business. Hence, project management is also an existing practice that consolidates all activities performed in a firm, and when employed on the go it can include mobile communication, the use of mobile social media, service development and delivery through the deployment of mobile technology. However, when explaining managing projects on the go, the interviewees identify a number of critical aspects that mobile technology enables when managing projects away from the office (see Table 29 overleaf). All activities within the sub-category entitled 'managing projects on the go' are consistently noted and stressed by all 28 firms deploying mobile technology.

Table 29. Activities involved in managing projects through the deployment of mobile technology: an empirical illustration

Mobile technology deployment activities to manage projects on the go	Illustrative Quotations	Sources*
Automating data integration	*"When I am away from my desktop, dining at a restaurant, my partner might require some information related to the project. I can flow that information, files or video clips or whatever it might be to myself and to my partner or anybody else I am working with, quickly and efficiently just through the mobile phone, because I store all files on my phone using the aNote app."* [I11] *"We use cloud computing so people can work remotely from home or wherever they wish to work from. Employees access their emails, they can access their folders and they can access their server. We can get emails on our mobile wherever we are, so you can check your emails constantly."* [I12]	25
Managing time effectively	*"I can do much more with mobile technology wherever I am."* [I1] *"If I travel I use my laptop to get my files and do some work. It saves time."* [I27]	28
Effective/relevant decision-making	*"The phone enables me to catch up with what's going on and what people require of me while I am away. So, I can start worrying about it immediately rather than waiting to get back to the office."* [I4] *"In terms of daily business activities, my phone is on, because that is important. The big change for me was when I could receive my emails on my phone, because if I am out of the office or I come out from a meeting and I am in*	28

Mobile technology deployment activities to manage projects on the go	Illustrative Quotations	Sources*
	London or somewhere else and I have no sight of my emails, you have no idea of what is going on; you are almost cut off. Whereas if you have got a phone that allows you to have your emails with you, I will go down and if any emails come in, I then take decisions if there is any need for action." [I23]	
Multitasking	*"We can do so much more. We can have updates regularly, find out what is going on at the office and at clients' offices, and put instructions forward about what we want to do, send money over, etc. Our business projects have developed massively, so just through that ability – being able to connect to the world anywhere anytime – yes, it is a big difference."* [I1] *"I mean, obviously, we do all have mobile phones and communicating between us happens mostly when we are on the run meeting clients, taking photos, brainstorming on the project. We do take our laptops to a cafe if we feel like having time alone or outside the office, to get inspired and creative."* [I29]	28
Teleworking	*"Usually there are five of us in this office; today there are only two of us. That is because one person is on holiday, one is working from home before going to a meeting in London and the other one is at a meeting locally. They will and they are connecting with mobile technologies… We have a kind of mobile work within our company and it's flexible. We have that office here and we have a small office*	28

Mobile technology deployment activities to manage projects on the go	Illustrative Quotations	Sources*
	downstairs where our designers are. That is all. As far as everything else is concerned, we have people who work from home, who work on the client side or who work from here, from home and from anywhere else. We are also in something called Soho Hub; it is a private members' club in London but also in a few little places in the world. So when we work in London, we use that as a base." [I13] *"And also to mention that we have offices in Wolverhampton, but lots of our team members work from different locations, so sometimes I do not see people for months, but I communicate with them on a daily basis on different platforms such as Skype or chat or email or just sometimes, because we both are travelling, so this is also the way how we may exchange information and exchange experiences."* [I18]	

*Number of sources/interview transcripts wherein the concept(s) was/were detected

To begin with, mobile technology is viewed as a tool that "*integrates any data, synchronises it automatically and shares updates automatically*" [I23]. This is particularly critical when individuals are working on different tasks, meeting people who are part of a single project and updating statuses regarding the latest developments through a sharing and knowledge exchange platform. Some firms that deploy mobile technology share data through a publicly available cloud computing network. Interviewee 12 comments "*we do use cloud computing, so people can work remotely from home or wherever they wish to work from.*" A few have installed software programs on laptops, mobile phone, tablets and office computers to manage and monitor projects:

> *"We do share data. We actually use something called 'Hamachi', which is software we run to share our computers and laptops. So we can share a folder. We have a version control within that folder, so as not to get too bogged down."* [I22]

> *"We have Basecamp, a program used to integrate and automate our projects in the cloud. We can access projects whenever and wherever. As such, we can monitor progress and any entry is automatically synchronised and we are all aware of the latest development within the project no matter who is responsible for managing it and feeding that back to clients."* [I28]

The automation of data enables instant and the latest information to speed up the response to clients' queries:

> *"We are so quick now in replying to clients with detailed descriptions of the progress we have made with work, because I can get a phone call on my phone and check information and forward it to the client via an email from my phone."* [I21]

The managing director from firm 20 reinforces interviewee 21's words by adding:

> *"We very rarely see any of our clients… We have an online system or approval of work as an online sort of project management tool. So clients log in, they see what work we have done. They tell us what needs to be changed, what they like, what they do not like. And then it is flagged up for us to do. We do the work and it goes back up online for them to look at it again. I use this system from my phone, my iPad. Perhaps the client does, too."*

Moreover, the very nature of some individuals' roles and responsibilities in advertising and marketing business involves remote work. The marketing director from firm 6 states that installers who fix billboards can send instant updates by emailing a photo of the billboard from their mobile phone. A few firms (I3; I5; I18; I23) employ account managers around the UK who are continuously on the move to meet clients around the UK and globally. There is not a problem coordinating information flow when "*employees have notes on a handheld mobile phone… they have all their emails in their pocket… and have access to the entire agency database via their mobile device*" [I3].

Automating and synchronising data entry instantly "*saves time*" [I27]. Mobile technology deployment employed to manage projects results in effective time management and decision-making. Having a "*source of information at your fingertips*" [I8] anytime and anywhere "*turns 24 hours of work into four minutes*" [I8].

Having access to data (*"if you have got a phone that allows having your emails with you"* [I23]) and instant communication ("I can instantly see people's emails" [I4]) leads to effective and quick decisions (*"if any emails come in, I then take decisions if there is any need for actions"* [I23]). This is particularly true, because mobile technology allows for working on various activities simultaneously.

> Multitasking: *"If I am out on business, I can email. I can look at my calendar. I can book meetings. I can conference call. I can go online. I can view PDFs. I can answer people's queries, and I do not have to be sat at my desk on my computer."* [I24]
>
> Teleworking: *"It is just because we all are flexible on when we work and where we like to work. There is a physical space, an office to meet clients mainly, but then work happens from home, wherever you wish to be, really."* [I28]

Finally, firms (I2; I15; I26) that do not deploy mobile technology named managing projects on the go as the best reason to avoid using mobile technology for work, because these interviewees prefer to separate personal life from work:

> *"I do avoid it intentionally by building boundaries and attempting to have a traditional office environment where only devices within the office space are means for me to contact my clients and for them to approach me. You know, my office is not moving with me – this is what I am trying to stick to. To be even more honest, I avoid using a laptop remotely. I just do not like that way of living. I know it is odd for today's world, but this is how I am."* [I26]

5.3.2.6. Summary

Overall the five types of activities (sub-categories), discussed above, illustrates that mobile technology plays an important role within the operational processes but also as the vital element that affects solutions delivered to the clients. Moreover, the detailed

discussion of each sub-category highlights a number of shared routines and coordination mechanism. These are discussed in the next subsection.

5.3.3. How are mobile technology resources deployed? The process in focus: Routines

The discussion on activities that form the mobile technology deployment process in interviewed firms, which deploy mobile technology, has highlighted a few routines that are in place in this respect. This subsection is based on a previous subsection (5.3.2.) and additional concepts/subcategories, which constitute the 'mobile technology deployment routines' category (see Table 30 below). Consistency amongst the responses regarding these five sub-categories of mobile technology deployment activities is presented in Table 30 under the column entitled 'Sources'.

Table 30. Set of routines comprising the mobile technology deployment process

Type of the Mobile Technology Deployment Routine - Subcategories	Sources*
Researching market	28
Tracking competition	15
Experimenting	15

*Number of sources/interview transcripts wherein the concept(s) was/were detected

Firstly, researching market, which is a routine common to all mobile technology deployment activities across all 28 firms, covers the analysis of the consumer market with a detailed overview of what and how individuals use mobile technology and consume mobile services and products. This subcategory is entitled as 'researching market' as its primary focus is the mapping of market trends.

Secondly, researching involves the additional routine, which 15 out of 28 interviewee, whose firms deploy mobile technology, outlined. This routine focuses on mapping and tracking competition by analysing and identifying best practices in deploying mobile technology. The aim of tracking competition is in establishing the benchmarks.

Researching market and tracking competition are rooted in organisational culture along with learning and embracing technological orientations. Continuous learning enables the flow of information, thereby generating technical knowledge on MTI (functionality of MTI), analytical skills to understand the current state of mobile technology deployment across the sector and beyond (consumption of MTI), transferrable skills to

translate technical knowledge about mobile technology into a firm and client's needs and finally creative skills or know-how to exploit technical knowledge through experimentation and improvisation. Hence, the coordination of complex mobile technology intelligence (mobile technology resources) is critical in ensuring the cross-functional dissemination of information. Informal discussions between technical and creative teams about existing practices that can be utilised in mobile technology facilitate organisational learning by incorporating individuals' knowledge into organisational memory. Management, creative and technical teams or departments exchange research results and reconfigure mobile technology resources to take mobile technology deployment further.

Hence, the third routine is experimentation, which is shared among 15 (3, 7, 9, 12-14, 16-18, 21, 24, 27-29, 31) firms that take mobile technology deployment further by integrating it into their services and products. Experimentation enables creativity through "*learning that is part of being creative*" [I31]:

> *"It triggers you eventually to be innovative, radical. You follow at first and then you start elaborating on different things and how you can use technology in different way."* [I31]

Overall, creativity is underlined as an essential element in the successful integration of mobile technology into business processes. The managing director from firm 13 insists:

> *"Creativity is the only legal mean to win over competition when it comes to mobile technology and social media. Especially when you can learn this technology quite easily, some kind of special ingredient is needed. For us, it is creativity."*

To boost creative thinking, firms "*bounce ideas from one to another*" [I24] and use the mechanism of regular meetings and informal knowledge sharing through intranets and other online tools such as social media sites:

> *"We regularly meet on a weekly basis and discuss new ideas about new approaches in the industry. It encourages the team to think outside the box… Our internal blog is a buffer for interesting things happening in the industry."* [I24]

Moreover, discussions and 'bouncing ideas' involve *"challenging clients"* [I27] and *"engaging the client while discussing what they want us to do and giving to them options on how we can deal with it"* [I9], because the business of creative service providers is driven by clients' needs and *"solving clients' problems"* [I3; I14; I27].

Small businesses provide employees with the chance to interchange roles and responsibilities, whereby "*technical guys can step up and get creative with their hands*" [I28] doing "*different things to develop different sets of competencies*" [I28] and "*upgrade skills*" [I29]. There are "*a lot more multi-disciplined, multi-tasking people*" [I7] employed and working in creative service firms. Nevertheless, all 28 firms that deploy mobile technology have an "*account management system in place where one will be allocated to be in charge of the project*" [I29], so individuals have "*designated tasks*" [I14] such as the strategic lead or the creativity and design lead. Having said that, account management allows everyone to lead projects. An 'intrapreneurial' organisational culture, i.e. the democratisation of corporate leadership, is exercised; meaning employees are empowered to make tactical and strategic decisions.

Finally, mobile technology itself represents a tool that "*plays an important role within coordination and information sharing processes*" [I14]. The creative director and business owner of firm 7 sums it up by stating:

> *"Mobile technology comes to aid us and help us in being creative and operationally manage processes, whether that is a mobile project management tool that allows us to do collaboration and get feedback and comments from clients or some other stuff. Mobile devices are more operational items that actually have become second nature to us. We take it for granted. Mobile technology gives us that freedom, because we do not get that bogged down in the management of operational matters, because I think technology should take care of that today and allow us to be creative."* [I7]

5.3.3.1. Summary

Existence of common routines to deployment mobile technology indicates the importance of mobile technology to organizational processes on both strategic and operational levels. This indicates that specific mobile technology capabilities exist in 28 firms, which deploying mobile technology.

5.3.4. Conceptualising mobile technology capabilities

This sub-section focuses on a conceptualisation of mobile technology capabilities that enable the acquisition, reconfiguration and use of mobile technology resources. Firstly, the practitioners' definition and interpretation of the concept is explored. Secondly, the set of mobile technology capabilities is presented and discussed.

5.3.4.1. Defining the mobile technology capabilities concept: Industry interpretation

Only 16 interviewees out of 28, whose firms deploy mobile technology, gave their definition and interpretation for the term/concept entitled 'mobile technology capabilities'. Among these 16 interviewees, a common trend when defining mobile technology capabilities is the firm's "*ability to embrace mobile technology effectively*" [I10] and "*creatively*" [stated by all interviewees except I2, I15, I26], "*in order to provide clients with the best possible solutions, extend these solutions*" [I10] and "*organise and manage processes more effectively and efficiently*" [I4]. Key elements are the management of MTI, tangible resources, through the combination of intangible resources such as skills, expertise and culture:

> *"Mobile technology capabilities are all about the integration of organisational culture, strategic vision and expertise within the company, in order to handle mobile technology."* [I18]

According to the managing director of firm 9, the ability to combine tangible and intangible resources as well as management practices is "*specific to each firm, because it involves the firm's unique vision, the unique service it provides.*" Interviewee 8 adds that "*mobile technology is fantastic, but only as far as we are able to manage it*."

Moreover, some interviewees placed more emphasis on the role of a particular mobile technology resource when it comes to defining mobile technology capabilities. Thus, interviewee 12 believes that relationships are critical for mobile technology capabilities development: "*identification of strategic partners and clients is also part of mobile technology capabilities.*"

On the contrary, interviewees 1, 9, 11, 12, 14, 21, 30 and 31 stress the importance of mobile technology functionalities and their distinctive features: "*Integration of technical possibilities of mobile platforms*" [I31] "*to offer more choice, more mobility,*

and more flexibility" [I11], with the vision of applying MTI, demonstrates that the distinctive nature of mobile technology provides a platform for ideas and new possibilities to create novel solutions and processes. The managing director from firm 30 says that the "*functional and technical capabilities of mobile devices make us as users reconsider what we can do with them further and how can we utilise these for our benefit*" [I30]. Moreover, interviewee 9 adds that the diverse variety of mobile technology categories requires an understanding and assessment of the technical and functional features of particular devices or software packages, because "*analysis of opportunities to create something new depends on which technology is considered by the company to be used for a specific project.*"

Nevertheless, the majority of respondents whose firms deploy mobile technology (16 out of 28) underline the individual's motivation to leverage mobile technology, skills and knowledge to use MTI. This is particularly true because mobile technology capabilities are claimed to involve scanning (sensing) for opportunities ("*being aware what is coming down the line*" [I11], "*understanding the impacts on consumers' lives and a potential for brands to realise new opportunities*" [I11]) and seizing opportunities "*to drive value for consumers, whether it is to make our life easier or more fun, whether it is to connect them in new ways*" [I12] through experimentation and exploration ("*trying to embrace mobile technology in which ways you can*" [I11]; "*you have got these tools, these functionalities to use and it is up to us to moll back and to turn it into something useful and unique*" [I14]). In support of this premises, the business owner and managing director of firm 13 provides an interesting argument:

> *"Mobile technology capabilities are our abilities to utilise the hardware. So things like producing new ideas with the use of mobile technologies, or perhaps employment of mobile technology within the process in our company. But capabilities are our abilities to come up with such ideas, which is obviously possible through the utilisation of our knowledge on that technology and our ability to transform that knowledge into an actual outcome. Knowledge can be created or obtained. So, my personal interest in technology and the continuous updating of skills and knowledge is what drives development in my abilities and my team's abilities to embrace mobile technologies further and further."*

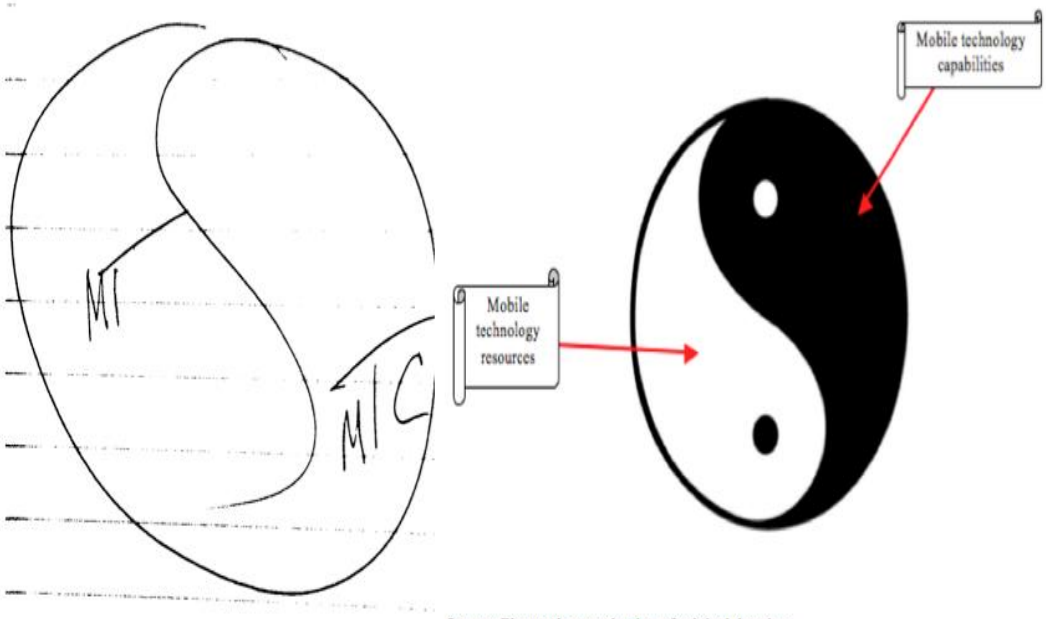
Finally, mobile technology capabilities are claimed to be a source of competitive advantage, because they enable "*different opportunities that create innovation and communications*" [I12]. Moreover, interviewee 12 adds that mobile technology creates different opportunities than "*other stationary, fixed technologies or communication channels*" do, because "*mobile technology is unique*" *and* "*creates a new value, social value, location value, entertainment value, utility value, information and personal value.*"

Opportunities and strategic value drive innovation and therefore *"give you an advantage as a firm"* [I13] *"to compete with the bigger boys"* [I11]. Interviewee 11 adds, *"In principle, for smaller firms, there is the same access to mobile technology resources as for large businesses."* Moreover, mobile technology capabilities are about *"using mobile technology for growth"* [I18], *"improvement of our own business processes, better returns on capital and making ourselves more competitive"* [I3].

Interviewees whose firms do not deploy mobile technology (I2, I15 and I26) did not offer a reply when asked to define mobile technology capabilities.

To sum up, the ideas expressed in interviewee 1's metaphorical illustration of mobile technology capabilities (see Figure 14 overleaf) demonstrates that mobile technology resources and capabilities are intertwined, as "*without one another cannot work; it is not separate*" [I1].

Figure 14. Metaphorical illustration to define mobile technology capabilities – the Chinese symbol 'Yin-Yang'



Source: Electronic reproduction of original drawing.

"*Within the capability there needs to be a bit of technology*" [I1] means that mobile technology capability implies understanding the unique features of mobile technology. Technology itself, however, without unique ways of exploiting, transforming or reconfiguring it, does not create or deliver any value. Hence, industry practitioners view mobile technology capabilities as unique practices of firms utilising mobile technology resources to create competitive advantage.

5.3.4.2. Mobile technology capabilities

In discussing the mobile technology process, common routines and decision-making practices, the interviewees cite a number of mobile technology capabilities that in combination with mobile technology resources drive "*improvement of our own business processes [and provide] better return on capital*" [I3], thereby making firms more competitive. Table 31 maps five mobile technology capabilities identified from analysing the mobile technology deployment process. The overall discussion is based on 28 firms, which deploy mobile technology.

Table 31. Set of capabilities comprising mobile technology capabilities

Type of the Mobile Technology Capability – Sub-categories	**Sources***
Leveraging mobile technology resources	28
- *Acquiring mobile technology resources* - *Accumulating mobile technology resources* - *Spanning mobile technology resources creatively*	11 14 20
Transforming	28
- Process - Service - Company	28 18 8
Learning	28
- Analysing the market - Gathering & sharing knowledge -Experimenting (sensing & seizing opportunities)	28 28 15
Solving problems	28
Leading	28
- Entrepreneurial vision - Strategising mobile technology deployment - Empowering employees	17 10 18

Mobile technology capabilities are: (1) reconfiguration and the effective use of mobile technology resources, (2) the transformation of existing processes, service offering and in some instances an organisational business model, (3) learning capability distinct from learning orientation as part of organisational culture, because learning capability involves the improvement and modernisation of solutions offered to clients, (4) solving clients' problems that require contextual and non-systematic measures and (5) strategic leadership capability to facilitate and drive the successful deployment of mobile technology.

Leveraging mobile technology resources

Leveraging includes accessing mobile technology capabilities not only through acquisition, accumulation and outsourcing but also via the orchestration of mobile technology resources to create a unique combination of organisational resources. In relation to MTI, 28 firms deploying mobile technology have different ways of gaining access to the required mobile technology hardware and software. Some firms (I3, I2, I14, I18) invest heavily in building their own MTI and view it as a strategic priority:

> *"We have changed our own software in-house within the last two years to align it with current mobile application technologies. We are looking all the time at that to see how we can best leverage what it offers a business like ours… We purchase new devices as soon as they come to the market… For us as a company mobile technology is definitely a strategic resource."* [I3]

Conversely, a number of firms (I1; I4; I7; I27) prefer to balance the risk of low returns on investment and mainly buy less pricy mobile technology software. Nevertheless, some firms (I6, I9, I10) avoid spending any funds at all to establish MTI, and instead they outsource MTI through external partnerships, since relationships are a strategically critical complementary resource to MTI. These firms acquire only cost-free mobile technology software alternatives that are available externally. One example of such a software program is Google Analytics. Nevertheless, a number of interviewees whose firms do not invest into buying mobile technology hardware for business purposes did express a plan to acquire mobile devices in the future:

"In the future we would love to get an iPad to use as a presentation tool, to communicate our ideas and work to our client." [I17]

"We are considering getting an iPad, because that is quite a good way to present our work." [I20]

"I do not have an iPad now. Probably we will get one for the company." [I23]

In relation to mobile technology skills, firms tend to be much more generous when considering acquiring new expertise and skills. Interviewees 24 and 29 state:

"Our Head of New Media is somebody who we looked for a number of years. We were looking for the right person to build that department and focus on things like mobile and social media." [I24]

"Understanding that we need a new expert made us recruit another person, so we realised that mobile apps might be a sensible source of revenue for us. We actually hired a Web developer who knows coding and mobile app design aspects, so that investment is getting to slowly show its return." [I29]

Alternatively, some interviewees use outsourcing to gain access to required mobile technology skills:

"If the complexity level of the project is really high, knowledge is outsourced in my company." [I5]

"There are some things which are beyond our capabilities. It has been more cost-effective to actually employ a consultant to come and do it for us than to battle our way through ourselves." [I6]

However, the account director from firm 24 stresses that the outsourcing of mobile technology skills can be "*a massive risk, because we are then relying on somebody else who is not part of our team, or part of our culture.*" Hence, acquiring skills by employing new specialists, or alternatively accumulating mobile technology knowledge by exercising continuous learning, is less risky. As discussed in the previous subsections, interviewed firms generate and accumulate mobile technology knowledge

internally through individual self-learning practices as well as attending external training and networking events.

Nevertheless, accumulating and acquiring mobile technology resources does not lead to the transformation of a business by introducing new revenue streams, i.e. in the form of new services. Creative spanning and the combination of mobile technology resources is the only way to "*deliver extra value to clients*" [I25] and a firm. Hence, creative spanning is linked directly to an organisation's capacity to innovate.

Transforming capability

A detailed overview of activities that firms go through when deploying mobile technology demonstrates that it does not really create new processes but instead transforms existing activities. This view is consistent across all 28 interviewees, whose firms deploy mobile technology. Communication, project management, service delivery and development are areas that mobile technology helps to change, resulting in efficiency, strategic and operational flexibility, operational productivity and cost efficiency. In addition, mobile technology deployment enables improvements to service offerings through the modification of existing services (mobile technology as a new channel to deliver existing services) or the introduction of new and radical services (mobile applications, mobile games). As a result, mobile technology capabilities involve "*using mobile technology for growth*" [I18].

Lastly, when discussing adhocracy in organisational culture, it has been highlighted that mobile technology affects the operational and strategic vision of an organisation. As a consequence, firms 3, 13 and 21 have completely transformed their business model by treating it as a 'mobile business' with no physical premises to accommodate employees or physical resources. Operationally, the business is managed through an information system ("*a virtual office space*" [I21]) that resides on mobile devices and enables communication and the exchange of data on the go, independent of location and time. This type of business is fully flexible and reduces overall running costs.

Learning capability

Apart from learning being a foundation for organisational culture in firms that deploy mobile technology, it is a complex capability that firms exercise when deploying mobile technology:

> *"If we need to learn to do something new, the ability to offer a new service will mean for us having to learn how mobile technologies are consumed and whether it might be a good channel to get what the client wants. So analysing the whole chain from clients' needs to their customers' needs is common practice."* [I10]

As discussed in the previous subsections, learning incorporates the analysis of markets and industry, by sharing and exchanging knowledge about mobile technology internally. This is critical to all five activities that the 28 firms perform, because knowledge and its flow across individuals, teams and departments facilitate the accumulation of mobile technology resources and enable a collaborative culture. Moreover, mobile technology is a tool itself, which is used to exchange knowledge as part of corporate communication:

> *"We are always sharing information. On Friday afternoon, we always have a common meeting where one of the people presents new ideas and trends they have spotted or seen. We use iPads to play with ideas. We all have Twitter and we tweet to each other about new things. We always pass on new campaigns that are interesting to friends and to each other. Everyone is always up-to-date and it is amazing the amount of information we are sharing over a week."* [I14]

Nevertheless, learning is not limited to knowledge accumulation and sharing but extends also to knowledge creation through experimenting, improvisation and ideation (subsection 5.3.3.). This is particularly true when scanning for opportunities, sensing opportunities and seizing opportunities, which are part of learning and the creative combination of ideas to use mobile technology. Moreover, the strategic planner from firm 14 highlights the cost advantages of experimenting with mobile technology in comparison to fixed networks and stationary desktop IT:

> *"What is great about mobile technology-related service innovation is that experimenting can go wrong and then the cost is minimal. If it goes right, then*

you drink Champagne. Taking a risk and creating innovative campaign is critical – and experimenting is a big part of it. Experimenting should be embedded in processes, and our agency has it. What is nice about our agency is that with mobile technology our experimentation took a logical root where we did not want to waste even small amounts of money, and through strategic analysis we ensured limited chances of failure. So, planning is critical even in a creative environment. As an agency we take risks and do things that we have not done before and try to push boundaries further. With access to the right tools you can create massive things."

Experimenting and exploring also *"encourage you to be innovative, to find new technology"* [I7] and to *"be flexible and proactive"* [I3; I7]. Interviewee 3 adds:

"It's a learning and exploring culture where you are not afraid to make the odd mistake – an exploratory culture. Absolutely, it's experimentation and exploration, seeing what is out there, communicating that to the team, taking that then and using our imagination in order to find out how to use such resources and skills to our commercial advantage."

Solving problems capability

Client orientation underpins the strategic direction of all 28 firms that deploy mobile technology, in order to provide bespoke solutions to clients' problems. The managing director from firm 9 comments:

"We started thinking about offering location-based mobile marketing as a result of our clients coming to us and asking us to resolve a problem through traditional sales promotion marketing."

Mobile technology is deployed as a result of need to solve client or company issues. This is particularly true when a firm has just started to incorporate mobile technology in its processes, which is confirmed by the following illustration. Interviewee 6 explains a problem her firm had with installers and how mobile technology helped to resolve it accordingly:

"One of the problems we had as a company is that we have our installers who put the posters up, actually physically put them up and take them down. They had to take photos of a campaign to prove that it had been up, as we needed to show it to our clients. Then there was, like, a three- to four-day window for getting those photos out and putting them into a presentation and then handing it over to the client. That caused problems; the clients had to chase us to prove the installs… But now our installers taking photos with smartphones and upload them through our VPN (virtual private network, Web browser). The images are with us instantly, so we save three to four days in implementing our projects and therefore make our clients happy."

Leading capability

Firms studied in this thesis are mainly small in size, so leadership and entrepreneurial spirit have an enormous impact on business strategy and the way processes are organised. In particular, the entrepreneurial vision to prioritise technology as a strategic business resource and to embrace the latest technological trends impacts on employee behaviour and the way they work. Most of the managing directors and business owners who participated in this study are passionate about mobile technology, receptive to technological tends and drive the deployment of mobile technology in their business:

"I am somebody who is excited by technology, gadgets and communication. So, I am always interested in looking for what new things are out there – how that will change behaviour, how that will be something interesting for clients – and try to bridge the gap between traditional broadcast and involved communication. I am the main leader and driver. What I do creates a wake of influence. I like to go forward in business. So the whole team tries, recognises and encourages innovation." [I7]

Nevertheless, leadership is exercised throughout firms that deploy mobile technology. For instance, an account manager who leads a specific project empowers individuals to drive the process. Interviewee 9 states that "*giving power to your colleagues is something that motivates high-value creativity; motivation for leadership is part of our company's vision.*"

However, the most critical component of leadership is an understanding that having MTI does not necessarily "*create fantastic opportunities*" [I12]. What truly matters is "*implications of mobile technology*" [I12]. In fact, interviewee 12 summarises that only strategic vision enables the development and deployment of mobile technology:

> *"Mobile technology capabilities are our capabilities as a service provider to deploy mobile technology, which comes to developing skills and strategies to successfully result in outcomes that result in profitable results. Identification of strategic partners and clients as well where this technology would be relevant is also part of capabilities."*

5.3.4.1. Summary

In summary, mobile technology capabilities represent a set of substantive capabilities which, through the transformation of existing processes, not only contribute to operational efficiency and effectiveness but also drive strategic change within business. Analysis, presented in the section 5.3., identifies similar and distinctive patterns in the ways 28 firms (all except 2, 15 and 26) deploy mobile technology resources and what mobile technology capabilities they exercise. The next section presents a cross-comparative analysis of these 28 firms, which resulted in identification of three clusters of practices across firms deploying mobile technology. The cluster analysis is based on the patterns derived from the previous sections of this chapter, and on profiling information presented in Chapter 4, subsection 4.5.1.4. NVivo software (the clustering function) assisted in confirming and visualizing the results of the cluster analysis.

5.4. Diverse Practices in Deploying Mobile Technology: The Cluster Analysis

The participating firms are clustered based on three strategic but in essence behavioural approaches to mobile technology deployment, using dimensions of mobile technology resources and mobile technology capabilities and profile characteristics of each firm (see Table 32 overleaf). Section 5.3. shows that there are differences across references to the identified categories (mobile technology resources; mobile technology deployment activities; mobile technology deployment routines; and mobile technology capabilities) and sub-categories. Although all 28 interviewees deploying mobile technology consistently refer to all categories discussed in section 5.3., the sub-

categories within each of the above listed categories are not consistently referred to by these interviewees.

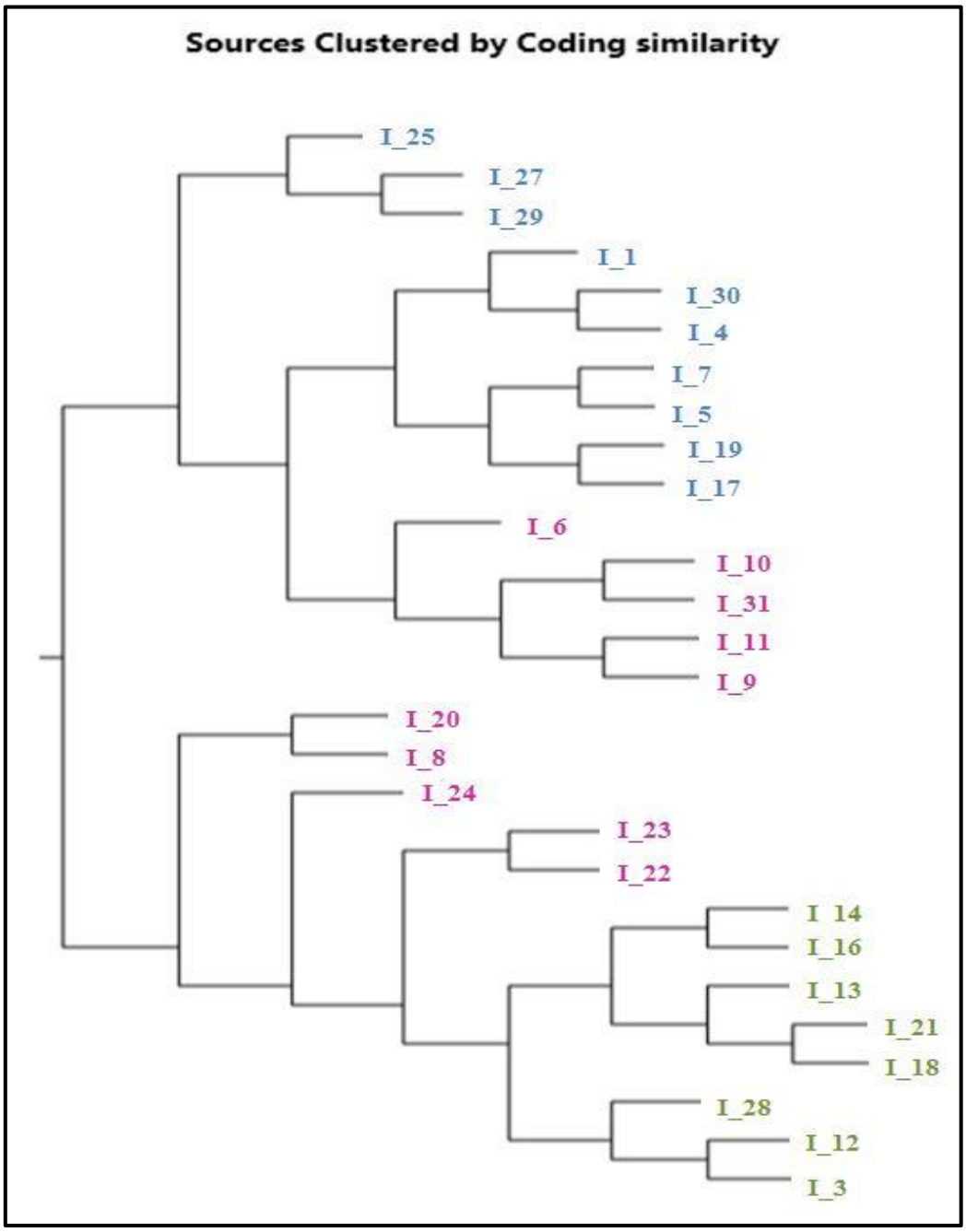
Table 32. Mobile technology practices: a three-cluster comparison

Sub-categories	Cluster A (Firms 6, 8, 9, 10, 11, 20, 22, 23, 24, 31)	Cluster B (Firms 1, 4, 5, 7, 17, 19, 25, 27, 29, 30)	Cluster C (Firms 3, 12, 13, 14, 16, 18, 21, 28)
Category: Mobile technology resources			
Mobile technology infrastructure (MTI)	Cost-free orientation of MTI policy	Moderate investment in MTI: MT-specific software	Extensive investment in MTI: software and hardware
Organisational culture	Learning orientation Client orientation – Responsive	Learning orientation Client orientation – Responsive Technological orientation– Researching Adhocracy	Learning orientation Client orientation – Proactive Technological orientation– Exploring and experimenting Adhocracy – 'Mobilisation' of business model
Mobile technology skills - In-house skills - Accessing external skills	 Low High	 High Low	 High Not present
Business network and relationships - Internal - External	 Segregation of duties High reliance on external partnerships	 Collaborative Low reliance on external partnerships	 Interchanging roles & responsibilities Not present
Category: Mobile technology capabilities			
Leveraging mobile technology resources	Outsourcing MTI and mobile technology skills	Acquiring MTI software, acquiring and outsourcing mobile technology skills, creative spanning	Acquiring and accumulating MTI and mobile technology resources, creative orchestration of mobile technology

Sub-categories	Cluster A (Firms 6, 8, 9, 10, 11, 20, 22, 23, 24, 31)	Cluster B (Firms 1, 4, 5, 7, 17, 19, 25, 27, 29, 30)	Cluster C (Firms 3, 12, 13, 14, 16, 18, 21, 28)
		of existing expertise with new MTI	resources to create unique combinations
Transforming	Operational process	Operational process Improving service offering	'Mobile' operational process New radical service solutions New business model
Learning	Researching about mobile technology deployment	Researching and scanning for new ideas on improving existing services	Researching and experimenting with ideas on developing new services
Solving problems	Objectives set by clients	Objectives set by clients with the firm's input	Objectives set by the firm with clients' input
Leading	Compliance with cost leadership strategy – mobile technology as operational tool	Strategic alignment of mobile technology specific strategic options (ethical MT use and simplification strategy) with overall business strategy	Proactive strategic orientation

Moreover, the cluster analysis function was able to verify the author's observation of similarities and differences across the sample. The cluster analysis included nodes/theoretical concepts under the category entitled 'profile'. Interview transcripts (sources) of 28 firms, which deploy mobile technology, were clustered by coding similarity. Figure 15 overleaf presents the results of the cluster analysis by colour-coding sources based on similarities among theoretical codes present at each interview transcript.

Figure 15. The NVivo cluster analysis by coding similarity



Three clusters, identified by the cluster analysis, exhibit three distinctive patterns and practices regarding the deployment of mobile technology. However, within each individual cluster, firms follow similar patterns in deploying mobile technology and exercising mobile technology capabilities. Cluster A has firms that plan and organise mobile technology deployment on an operational level only. Firms that see mobile technology as an operation-enabling tool do not strategically change their business

processes but adapt mobile technology deployment practices to the existing strategic direction of the firm. Hence, only the operational process is transformed. Cluster A firms are followers in their behavioural attitude towards mobile technology deployment in the sense that they "*find, track and analyse*" the competition, because, according to interviewee 6, the media-focused nature of creative businesses implies "*taking advantage of all different technologies.*" As a slight aside, all 28 firms from the three clusters stress the significance of learning (researching and scanning for opportunities in particular) as part of the mobile technology capabilities set.

Firms in Cluster B demonstrate that there is a possibility to diversify the strategic orientation of the firm and work on specific mobile technology deployment projects (transforming services). Strategically, such projects are aligned with the overall business strategy. Firms representing Cluster B react to mobile technology deployment by calling it an 'adaptive corporate culture' whilst balancing it with the existing business profile:

> *"Any good company will always be open to adapting to its surroundings. The only thing constant due to technology advancements is change…. You have to change with the landscape. We do change with the landscape. Not change completely, but we adapt, become flexible, keep a balance. This is our corporate culture."* [I1]

Creativity has a central role in the adaptation processes of firms that are part of Cluster B and allows them to challenge and transform existing mobile solutions and applications in the market. This then helps them to advance the mobile technology deployment process and to bring new revenue streams into the company.

Finally, one group of companies sees the opportunities mobile technology triggers as an area for entrepreneurial spirit and the chance to take a risk in transforming the business model of the company to one specialising in mobile technology's digital offering (Cluster C). The managing director of firm 3, which is categorised in Cluster C, states that the "*identification of unique competences that mobile technology possesses*" induced them "*to restructure, even start-up from the scratch*" their business. Cluster C firms take up a leading role in embracing mobile technology innovatively and creatively. It is clearly evident that the third strategic behavioural pattern towards

mobile technology deployment implies the development and delivery of innovative service solutions.

In terms of profile characteristics, the overall analysis indicated differences and similarities in the deploying mobile technology practices based on firms' characteristics only. The empirical data do not reveal any consistency or patterns, which are based on the role of each interviewee within the firms (units of collection). It is clear that all interviewees have a sufficient knowledge around mobile technology deployment in their firms – they are key decision-makers when it comes to understanding and deploying mobile technology. For the smaller in size firms such decision-makers are owners of the business and for the medium-sized firms the decision-makers play a particular role in shaping the strategic or creative visions of these firms. This is true even in the case of firm 3, represented by business owner/managing director, who owns the whole business (medium-sized firm) but manages a small 'sub-business/sub-division' that focuses on new media and mobile technology. Moreover, two out (5 and 25) of three firms, which are represented by freelancers, tend to be reactive and deploy mobile technology irrespective creatively without overreliance on external outsourcing but focusing on personal development and skills' update first.

In terms of differences in firm characteristics regarding a particular cluster (see Table 33), there are a few aspects worth mentioning. Firstly, each cluster, A, B and C, includes micro entities employing up to ten people and small businesses with up to fifty employees, although Cluster C has the majority of medium-sized firms employing up to two hundred employees. Secondly, the portfolio of services varies in all three clusters. Cluster A firms primarily offer traditional marketing services such as branding, consultancy and design packages for print advertising with a slight touch of digital offerings such as online marketing. Cluster B, on the other hand, diversifies its digital media services and extend them to web-design, online marketing and the development of digital content. Lastly, Cluster C firms do not offer traditional print media to their business clients but organise instead their operations around the design and sale of digital content and consultancy on digital business and marketing strategies.

Table 33. Mobile technology deployment clusters: a cross-comparative analysis of firm profiles

Firm Characteristic	Cluster A	Cluster B	Cluster C
Number of employees	1-10; 11-50	1-10; 11-50	11-50; 51-200
Services:			
-Print Design	Large-format print advertising	Print advertising and public relations	Not present
- Digital Design and Digital Architecture	Interactive digital advertising	Digital content, direct and online marketing	Digital content, cloud-computing services
- Marketing and Advertising Consultancy	Not present	Strategic marketing, branding	Integrative marketing solutions, branding, strategic marketing
Process orientation	Project-based	Project-based	Project-based

Overall, the analysis shows that there is potentially a relationship between the size of SMEs and the extent or commitment to mobile technology deployment. However, it is only evident in Cluster C where all medium-sized firms fit. Perhaps access to more resources as well as a number of employees within Cluster C firms allow these firms innovating and expanding their practices of mobile technology deployment beyond internal uses.

Differences in the nature of firms representing each cluster reflect distinctive mobile technology deployment practices (compare Table 32 and Table 33). Cluster C companies, for instance, tend to organise the internally driven mobile technology deployment process be attempting to develop and maintain a portfolio of skills that is required for handling extensive investments in MTI. The managing director from firm 3 claims:

> *"New skills, new skill sets. In fact, we have merged our traditional designers and outworkers with our digital people. We did it in July 2010… We invest heavily in training and communication across the company."*

As opposed to Cluster C, mobile technology skills in Cluster B have a two-fold sourcing input. Firstly, external guidance and new specialists are invited into Cluster B firms to

work on an ad-hoc basis when purchasing mobile hardware and setting up skills upgrade programs for existing employees. Interviewee 1 states that "*training takes place from time to time*" in the form of attending exhibitions and specialist seminars on mobile technology topics.

Firms 6, 8, 9 and 22, which represent Cluster A, use strategic collaborations (external business relationships and networks) and partnerships to gain access to mobile technology software (MTI) and expertise (mobile technology skills) in deploying mobile technology. Searching for partners, who specialise in developing particular types of mobile service and content, is seen by interviewee 6 as a less risky strategy when integrating mobile technology into processes:

> *"We work with an interactive partner or labs. If we approve the pitch, secure the business, then the client will speak directly to our interactive partner and they will brainstorm and come up with a storyboard. They will actually name and develop the actual content, and then program it."* [I6]

However, gaining access to scarce mobile technology resources externally does not go beyond mobile technology capabilities being practiced only operationally.

Cluster C firms purchase a good deal of mobile technology hardware, such as various devices and appliances for mobile broadband network connectivity, and "*software allowing for initiating and maintaining the work of mobile devices*" [I12]. Investment decisions regarding MTI are in line with the strategic direction of Cluster C firms as digital media experts. Conversely to Cluster C, firms that belong to Cluster B moderate their investments in mobile technology hardware and compensate for this by focusing on the acquisition and development of mobile technology software instead.

Having a diverse range of services, including print media and digital media, perhaps demonstrates the slight resistance of Cluster B firms to offer digital marketing products only. As interviewee 1 explains, "*dealing with a new type of product like a mobile application*" encourages firms "*to invest heavily in software packages which my company tends to think carefully about.*" By analogy with Cluster C, investment decisions regarding MTI are in line with the purpose of mobile technology deployment in Cluster B. The author concludes that Cluster B firms take a slower approach to

unveiling opportunities provided by mobile technology, because there is a clear focus on diversifying traditional service offerings by adding mobile technology-enabled solutions (mobile applications) as well as embedding mobile technology elements into established services (mobile advertising).

Clearly, firms representing Clusters B and C follow a similar logical pattern: decisions about investing and acquiring MTI and mobile technology skills are driven by the strategic role of mobile technology deployment in the company. Cluster B firms choose to embed mobile technology elements into their business; hence, the costs of facilitating mobile technology deployment processes are kept to a moderate level, whereas firms from Cluster C transform the entire business model as a result of heavy investment in MTI and believe that building a digital service company is a source of competitive advantage. Firm 3, for instance, has reorganised its business operation into a mobile office structure, thereby allowing its employees "*to live and work – work from home… their office is at home.*" In fact, a mobile operation without the restriction of a specific physical location (organisational culture – an adhocracy) gives firm 3 the chance "*to operate UK-wide from a couple of regional bases*" and have remote account managers who can deal with clients directly. Operational adjustment ability is evident in Cluster C firms as a result of deploying mobile technology, which helps firms representing Cluster C to accumulate valuable resources. Therefore, the author concludes that mobile technology capabilities are substantive in Cluster C firms.

Conversely, firms representing Cluster A follow a pattern of implementing mobile technology deployment process based on an existing company's strategy. These firms see mobile technology as an efficient tool for enhancing operational activities. The creative director and business owner of firm 31 emphasises that "*mobile technology is pretty much operational*" concerning "*working on daily basis and using mobile devices and piece of software.*" Cluster A firms clearly state that the deployment of mobile devices facilitates operational flexibility and results in timely communication and decision-making, as mobile technology deployment enables "*a lot more confidence in the tracking and installation process*," thereby allowing the company to "*be transparent and manage organisational processes effectively*" [I6]. Hence, the author concludes that Cluster A gives no strategic importance to mobile technology.

5.4.1. Summary

Diversity across the practices of deploying mobile technology derived from the patterns and analysis of references interviewees made regarding the categories, which describe the process of deploying mobile technology. The cluster analysis function verified the author's assumptions and revealed that based on coding similarities 28 firms, which deploy mobile technology, can be clusters into three distinct groups (Clusters A, B, and C). Further analysis and cross-comparison between the 'Process of Mobile Technology Deployment' and 'Profile' codes revealed that the three clusters reflect distinct strategic visions/directions regarding mobile technology deployment. It is evident that solely acquiring or outsourcing mobile technology resources does not result in the transformation of solutions offered to clients. However, as a result of mobile technology deployment, operational efficiency leads in turn to cost savings (Cluster A). Clusters B and C prove that only interaction between two elements, namely mobile technology resources and mobile technology capabilities, can lead to advantages such as new services, new business models. Three clusters clearly demonstrate how the creative SMEs delivering marketing, advertising, digital architecture and digital design services deploy mobile technology. The author concludes that the orchestration of mobile technology resources, through a unique combination of distinct mobile technology resources, facilitates innovative practices and other forms of strategic and operational outcomes. There is potentially a relationship between the size of SMEs and the extent or commitment to mobile technology deployment. This is only evident in Cluster C where all medium-sized firms fit. Perhaps access to more resources as well as a number of employees within Cluster C firms allow these firms innovating and expanding their practices of mobile technology deployment beyond internal uses. Moreover, there are five distinct substantive mobile technology capabilities (leveraging mobile technology resources capability, transforming, learning, solving problems, and leading), which can be exercised in combination or in isolation. Hence, mobile technology capabilities, through the transformation of existing, processes can contribute to operational efficiency and effectiveness and also drive strategic change within business.

5.5. Defining Service Innovation: The Practitioners' Perception

This and the following sub-sections focus on categories which explain the second research object of this study - service innovation practices (SIPs). Firstly, the author

discusses the perceptions and meanings which interviewees assign to the term 'service innovation'. Secondly (section 5.6.) will provisionally discuss links and interactions between the categories, presented under the 'process of mobile technology deployment group', and categories, identified as the outcomes of SIPs. These interactions form the substantive theory, which the author presents in Chapter 6.

Although innovation in services is not a novel concept that needs to be introduced to theory, it remains unclear as to whether practice has any understanding of what innovation means in a service setting. Hence, this study attempts to capture creative service providers' (delivering marketing, advertising, digital architecture and digital design services) views on defining service innovation.

Different variations of meaning derived from accounts given by the interviewees will be presented below. However, all 31 interviewees mostly speculate rather than provide an explicit definition of the term. Since unfamiliarity with the 'service innovation' concept was expressed by 11 interviewees (I4-I6, I9, I12, I16-I17, I23, I25, I30-I31), this is not a surprising fact.

Interviewees 12, 16, 25 and 30 state that they "*do not know what service innovation is,*" while interviewees 4, 5 and 6 state that they "*have never heard that term before.*" In his reply, the IT designer and partner in firm 17 asks questions:

> *"Service innovation, is that to do with us adding new services to the things that we supply to clients? Or is that something more to do with taking services that we provide and using technologies or something else to innovate existing services?"*

Lastly, interviewees 30 and 31 believe that innovation in services is unfeasible, because there are not "*many new, completely new, services at all; everything has existed for a while*" [I30], and "*technology as a product*" represents innovation [I31].

A few interviewees (I9, I15, I22) explain the meaning of service innovation through a simple metaphor or by association with real-life examples. Interviewees 15 and 22 conclude that service innovation might mean a common practice in service firms, because innovating implies the "*provision of a good service*" [I15] by fusing creativity with technology. Interviewee 22 adds that the provision of a good service implies trial

and error practices through experimentation, listening to the customer and evolving in tandem with the external environment. The managing director from firm 9, on the other hand, thinks that innovation in services starts with an interesting service concept that immerses consumers in the service and then ends with the chance to diversify the initial service concept by linking new ideas and concepts. In particular, interviewee 9 illustrates this by using the example of an innovative mobile game that can be integrated further with other forms of advertising and/or entertainment.

Other than that, the small number of interviewees (13 out of 31) provides definitions for the service innovation concept by giving a clear explanation on what it means to their firms. These interviewees attribute two distinct meanings in this respect (see Table 34).

Table 34. Defining service innovation: a practitioners' perspective

Service Innovation Meaning		**Representative Quotes**	**Sources***
(1) Process		*"Service innovation is innovations in context. Service innovation is related to cloud computing integration and integration of the mobile way of implementing processes. It is all about providing to our clients easy access to work and the ability to see the development of a project."* [I14] *"We just see service innovation as providing the best possible experience we can. That means communicating well. It means being on time with things. It means the language we use."* [I19]	10 (I2-I3, I6-I7, I10-I11, I14, I21, I23, I28)
(2) Outcome	Generic	*"Our services include all things like digital marketing, online marketing and traditional sources, and being as creative within these boundaries as we possibly can be is what service innovation means to us."* [I10] *"As for us, it is being able to provide unique and improved solutions to our clients."* [I11]	8 (I3, I7, I12, I13, I14, I21, I26, I28)
	Incremental	*"I think service innovation is about working*	

Service Innovation Meaning		Representative Quotes	Sources*
		to improve the final result. It is just about taking a risk and doing your research, trying to find out something new that was not spotted before and trying to implement it and to monitor the benefits of the implementations. But it's always about risk, but only with risk can improvements be achieved." [I18] *"I think it is an improvement. I do not believe in changes to something that is not broken. If something is working for me, I will continue to nail it and get it right even better."* [I25]	
	Radical	*"Service innovation is something that I have never seen before."* [I17] *"Innovation in service is being able to give something radically new to that particular client and then eventually starting to offer it to other clients, too."* [I29]	

*Number of sources/interview transcripts wherein the concept(s) was/were detected

These two distinct meanings are, (1) service innovation as a process and (2) service innovation as an outcome, i.e. a final product or service provided to a customer. Quotes included in the tables are typical and representative of the interviewees' meanings and interpretations, and depth is provided through the addition of other quotes, to support the discussion on findings within the main body of the text.

In fact, this categorisation corresponds to the theoretical conceptualisation of innovation in services chosen in this research. Accordingly, processes such as service innovation resemble SIPPc and service innovation, as their outcomes resemble SIPPd. Process service innovation suggests providing the best possible experience through innovative practices involved in the process of providing that particular experience. Interviewee 2 adds:

> *"Service innovation is just about development. It grows to feed the structured needs that the business and the customers have. It changes the way that you supply a service. It's not really an innovation, but just a development of the business."*

Hence, the transformation of processes underlines SIPPc. Transformation is grounded in *"understanding, seeing and creating"* [I11], while SIPPc is all about *"new ways of thinking about how to utilise technology or how to take an idea and deliver it differently"* [I28].

On the contrary, interviewee 26 believes that service innovation is an outcome (SPPd), "*offering new services that clients are interested in but in an economical way.*" At the same time, the economical way of offering new services suggests changes in operational processes. Therefore, SIPPc and SIPPd are interrelated, and in order to gain the best results, both SIPs need to be produced simultaneously:

> *"Ultimately, I see service innovation as trying to deliver something extra special for your client and saving money at the same time in terms of operational expenses for your company."* [I23]

The strategic planner from firm 14 concludes that having individual SIPs is efficient, but having both SIPs strengthens a firm's competitive position:

> *"There is a twofold element to service innovation – processes and outcomes. It is like a bundle, and with mobile technology you can go for only the first one or only the second one, or to be even more powerful in innovation you can cover both."*

In addition, the interviewees perceive process innovation as a firm-specific concept and product innovation as a client-specific concept.

Furthermore, the categorisation of SIPs indicates different views across the three clusters identified in the previous chapter. However, the explanation power of such views is not high as only 13 interviewees defined SIPs, two of whom (I2 and I26) represent firms that were not included in the cluster analysis, as they do not deploy mobile technology. The author concludes that interviewees representing Cluster C firms

form the majority of these practitioners who defined either of SIPs (six interviewees out of 12: I3, I12-I14, I21, I28). Moreover, the majority of them (five out of six) interviewees recognise both outcomes, SIPPc and SIPPd:

SIPPc:

> *"Process innovation is what we do a lot. So it is basically improving the processes to perform better results for the company but substantial results such as efficiency, creativity, speed and so on."* [I3, Cluster C]

SIPPd:

> *"Product innovation in services is the actual service outcome that the client has asked for, albeit novel, unique or different… One example is the mobile applications we have started to produce and now offer on a regular basis to our client."* [I3, Cluster C]

The author cannot make any conclusions regarding Cluster B's views on the definition of SIPs as only one interviewee from firm 7 defined both elments of SIPs:

SIPPc:

> *"Service innovation internally is what we are working on all of the time in an attempt to update our processes and make things more organised and more efficient."* [I7, Cluster B]

SIPPd:

> *"Service innovation externally is all about what you sell to you clients, portfolio of your services really."* [I7, Cluster B].

All Cluster A interviewees who defined the term service innovation (I6, I10-I11, I23) reject the idea that in the context of services companies deal with SIPPd at all:

> *"When I hear this, I tend to think about technological devices and all-new devices. I do not think it is something to do with the business of servicing."* [I6]

However, firms representing Cluster A clearly emphasise the presence of SIPPc, stating that 'service innovation' and 'process innovation' are interchangeable terms. The

managing director from firm 6 says "*I would actually redefine service innovation to process innovation, because this is what servicing is all about, about the process.*" Interviewee 10 adds to this point and defines service innovation as the:

> *"Outcome of creatively thinking about how to implement mobile technologies within our company and be a solid part of a mobile, digital society, digital business"* [I10]

In conclusion, it is critical to note that the interviewees emphasise that innovation in services has a unique, ad hoc and continuous nature, because service innovation means *"finding new and better ways to respond to your clients' needs… every time you do a project you need to innovate constantly"* [I21]. Solving creatively the problems of clients as well as those of the firm enables the continuous generation of ideas and a unique combination of resources and helps *"to avoid commoditisation"* [I7]. Moreover, the creative director from firm 7 indicates that SIPs represent sources of competitive advantage for a firm. Hence, in order to remain competitive, service firms need to shape and perform SIPs:

> *"Service innovation is about competitive advantage and margin increases. As such, you identify the need and want and then you service that in a way that no others can, even if it is only the perception that nobody else can do the same because of the way you presented it – the repackaged nature of it. It's also about the journey involved in delivering the service, the experience of it."* [I7]

5.5.1. Summary

The author concludes that innovation in the services context remains an ambiguous and unfamiliar concept to the practitioners: the limited number of interviewees shared their perception on the term 'service innovation'. The quotes presented in this section identify technology and mobile technology in particular as inputs into SIPs. However, no current studies explore further the role of mobile technology capabilities in SIPs. The next subsection explains links and interactions between the categories, presented under the 'process of mobile technology deployment group', and categories, identified as the outcomes of SIPs. The cluster analysis, discussed and explained in section 5.4., underpins the overall discussion.

5.6. Service Innovation Practices in the Creative SMEs: Exploring the Role of Mobile Technology Capabilities

This study seeks to explore the role mobile technology in service innovation practices of creative SMEs. From sections 5.3. and 5.4. it is clear that mobile technology deployment affects innovation activities in firms through transforming the operational process, changing the portfolio of service offerings and by completely altering the business model as a result of utilising mobile technology. This subsection explores further the role of mobile technology deployment in service innovation, and particularly the role of mobile technology capabilities in each SIPs, SIPPc and SIPPd.

5.6.1. Interaction between mobile technology capabilities and service innovation practices

Collectively, the interviewees believe that mobile technology deployment can facilitate service innovation and stimulate innovation. In fact interviewee 28 notes that "*mobile technology stimulates and facilitates service innovation.*" Firstly, the stimulation of service innovation implies the indirect role of mobile technology in producing innovative practices. This indirect relationship is the result of changes to and the transformation of organisational processes caused by mobile technology deployment. In support of this argument, interviewee 17 states:

> *"Mobile technology enables us to do things easier or quicker or differently for clients. I am not too sure if it is really an innovation. But mobile technologies like Dropbox or email or Twitter, as a way of stimulating creativity within the company, drive innovation."*

The interviewees particularly address the indirect role of mobile technology in enabling creativity. Interviewees 21 and 30, who view mobile technology as a platform that triggers creative thinking and learning, state:

> *"I think the technology is only really driven by our ongoing development as a society, anyway. It is just kind of pandering to our needs, as I outlined before about some people having access to things immediately. And, I think, in terms of creative delivery, mobile technology really allows brands and companies to find another avenues for people to experiment and play with."* [I21]

> *"Surely, mobile devices stimulate innovative practices, because they are tools to improve our daily routines and be efficient so time is left for extra creativity."* [I30]

Moreover, interviewee 6 adds that generating knowledge about mobile technology stimulates thinking about different ways to *"integrate different social and technological opportunities,"* while operational flexibility enabled through mobile technology deployment *"provides a quicker reaction"* to solving clients' problems. Hence, practicing learning as part of mobile technology deployment stimulates innovation in services.

Secondly, mobile technology deployment can play a direct role in facilitating service innovation. In contrast to stimulation, facilitation implies that mobile technology is an input into the innovation process or the outcome. A simple example of mobile technology facilitating service innovation can be found in the introduction of mobile text-based advertising, where mobile technology facilitates the extension of the existing service portfolio by offering a new "*delivery channel for the information or a product itself*" [I25]. Interviewee 3 talks about a new approach to serving their medical clients, known as CLM (closed-loop marketing). This approach allows pharmaceutical distributors and sales agents to visit General Practitioners and to demonstrate new products by using mobile tablet computers, taking on comments and feedback and then sharing these immediately with the main office. Mobile technology in this example enables one-on-one marketing and efficient data interchange, both of which underpin this new marketing approach. The mobile device is a direct input into developing a new practice and service.

The strategic manager from firm 1 and the managing director from firm 30 clearly identify mobile technology as a tool for improving processes, which eventually leads to innovative practices. Hence, mobile technology itself becomes a critical element of innovative practices:

> *"With new technology, innovating becomes easier because there is another tool which people can use. It is new, so it allows people to do things differently to how it has been done before. With mobile technology there are new tools now, new ingredients to add to things, making things a bit better, I think."* [I1]

Moreover, the managing director of firm 29 stresses that the distinctive nature of MTI renders processes more flexible, which in return prompts creative thinking and ideation:

> *"In the beginning, creativity was based on the flexibility allowed by using mobile devices. But then having this new platform makes you to think of new ways to attract customers and offer a different product to your clients."*

Hence, the conclusion can be drawn that mobile technology resources, in particular mobile technology infrastructure, support the development of service innovation. Therefore, leveraging mobile technology resources and transforming capabilities are the most critical actions to consider when mobile technology facilitates service innovation.

As evident from all of the quotes illustrated above, stimulation through creative thinking and facilitation leads to both SIPs, namely SIPPc and SIPPd. However, the three clusters of firms identified in the section 5.4. show differences across SIPs (Table 35).

Table 35. Summary of service innovation practices across three mobile technology deployment clusters

Service Innovation Practices (SIPs)	Cluster A	Cluster B	Cluster C
Process Innovation (SIPPc)	✓	✓	✓
Product Innovation (SIPPd)	×	✓	✓

Cluster A, which deploys mobile technology on an operational level only, develops innovation through processes but does not produce SIPPd as a result of deploying mobile technology. On the contrary, Clusters B and C clearly indicate that mobile technology deployments have transformed their processes, services and even the overall business model in the case of Cluster C. Thus, by deploying mobile technology, firms representing Clusters B and C create SIPPc and SIPPd. Details of each type of practices are discussed further in subsections 5.6.2. and 5.6.3. The results are presented in terms of three clusters, three distinctive behavioural patterns aligned with the deployment of mobile technology, because the degree of organisational commitment to mobile technology deployment drives process and product innovation in a service setting.

5.6.1.1. Summary

Overall, the following conclusion stands – mobile technology deployment plays a positive role in SIPs. The next two subsections proceed by looking at findings on the role mobile technology capabilities play individually in SIPPc and SIPPd.

5.6.2. The role of mobile technology capabilities in facilitating and stimulating process innovation in a service setting

All 28 firms that deploy mobile technology capabilities confirm the presence of SIPPc in their businesses. Table 28 demonstrates a cross-comparative analysis across three clusters on what innovation areas change within organisational processes as a result of mobile technology deployment. Additionally, this Table presents the examples of each SIPPc area and the consistency across interviewees' references by listing in brackets interviewees who mentioned each SIPPc area. Table 36 overleaf presents a cross-comparative analysis across the three clusters on the role of individual mobile technology capabilities in SIPPc. The analysis is based on patterns discussed in sections 5.3., 5.4. and the previous subsection 5.6.1.

Table 36. Innovation areas within organisation processes: a cross-comparative analysis of three mobile technology deployment clusters

Cluster A	Cluster B	Cluster C
Communicating with customers (9 interviewees: I6, I8-I11, I22, I23, I24, I31) Example: work mobile phones with shared contacts across the firm 6	Communicating with customers (10 interviewees: I1, I4, I5, I7, I17, I19, I25, I27, I29, I30) Example: Skype app installed on the firm's iPad for conference talks on the go – I17	Communicating with customers (8 interviewees: I3, I12, I13, I14, I16, I18, I21, I28) Example: work mobile phones across the firm – I14, I16, I18
Promoting (10 interviewees: I6, I8-I11, I20, I22, I23, I24, I31) Example: live Twitter updates on events using mobile app – I8	Promoting (10 interviewees: I1, I4, I5, I7, I17, I19, I25, I27, I29, I30) Example: live Twitter updates on events using mobile app – I1, I7	Promoting (8 interviewees: I3, I12, I13, I14, I16, I18, I21, I28) Example: mobile app for the company – I12, I3
Managing internal operations (6 interviewees: I6, I9, I11, I22, I23, I31) Example: using mobile phones to transmit updates and data on the billboard installations – I6	Managing internal operations (8 interviewees: I1, I7, I17, I19, I25, I27, I29, I30) Example: the Basecamp mobile programme for data management and sharing – I19	Managing internal operations (7 interviewees: I3, I12, I13, I16, I18, I21, I28) Example: the Basecamp mobile programme for data integration and automation – I28
	Maintaining and developing service (10 interviewees: I1, I4, I5, I7, I17, I19, I25, I27, I29, I30) Example: mobile apps to manage social media for the clients – I19	Maintaining and developing service (8 interviewees: I3, I12, I13, I14, I16, I18, I21, I28) Example: tablet used to design and test responsive design websites – I12, I21
	Delivering service (10 interviewees: I1, I4, I5, I7, I17, I19, I25, I27, I29, I30) Example: mobile text-based advertising – I25	Delivering service (8 interviewees: I3, I12, I13, I14, I16, I18, I21, I28) Example: in-app advertising – I14, I16
		Creating new business division (8 interviewees: I3, I12, I13, I14, I16, I18, I21, I28) Example: New Media department

Table 36. Role of mobile technology capabilities in process service innovation practices: a cross-comparative analysis of three mobile technology deployment clusters (continued)

	Cluster A	Cluster B	Cluster C
Mobile technology capabilities			
Leveraging mobile technology resources	Nurturing external relationships to access scarce mobile technology resources and outsource mobile technology-related projects that require sophisticated MTI and mobile technology skills	Acquisition of MTI is based on firms planning for changes and modifications to organisational processes. Accumulation of mobile technology skills is devoted towards modifications and innovative solutions in processes	Acquisition of MTI to advance systems and tools to be used for new service development. Only internal mobile technology skills are accumulated and acquired
Transforming	Transforming operational process through MTI	Transforming operational process through MTI and mobile technology skills	'Mobile' operational process New business model
Learning	Learning not leading to changes but researching market is common practice	Learning supports acquisition and accumulation of MTI and mobile technology skills to improve operational process and management of projects	Learning focuses on accumulation and exchange of knowledge – mobile technology skills
Solving problems	Client orientation but with outsourcing as practice when it comes to mobile technology-related projects that require sophisticated MTI and mobile technology skills	Technological orientation to solve firm's problems in operational process. Teleworking to enable flexibility and creativity in service development process	'Mobilisation' of business model – fully mobile working to facilitate service development process
Leading	Cost leadership strategy implies the direction the firm has taken towards gaining access to scarce mobile technology resources in order to improve operational processes in the firm.	Mobile technology strategy is based on MTI decision-making process where moderate investment policy is applied into purchasing and developing mobile technology software only.	Proactive strategic orientation reflects both strategic and operational decisions. Acquiring and accumulating in-house portfolio of mobile technology resources have a direct impact on strategic behaviour of the firm towards mobile technology deployment.

All 28 firms that deploy mobile technology agree that learning as part of mobile technology capabilities stimulates SIPPc and even more interestingly in areas such as customer communication and consultation, promotional activities and internal administration and management processes. This is found to be true for all three clusters. Researching the market as part of learning practice particularly supports improvements in areas such as communication and consultation with clusters, service development and service delivery. To support this claim, the managing director from firm 8 states:

> *"I have the ability to engage in research, no matter where I am. I can create research immediately, because resources are available immediately which allow me to do that. I can advance my client's problem solution simply by having mobile technology."*

In addition, the above-mentioned quote indicates that the problem-solving capability also helps firms to innovate within the customer communications, service delivery and development areas. As a result, based on what interviewee 16 representing Cluster C says, researching and understanding the linkages between market behaviour and the opportunity to think about benefits for the client – thereby solving the client's problems – result in new approaches to delivering existing services (content) or new approaches to developing and improving said services:

> *"One example is QR codes and the mobile incorporation of QR readers. We do it and started to work on it when a client approached us with a problem regarding maximising the use of different traditional and digital channels. QR is prevalent in laptops as well, but if you are out on the street it is not that practical. What we came up with is aligning static media with a mobile that will take you through to content. So now a lot of our outdoor advertising is linked with QR codes, which will take you through to a piece of content, which then extends user journeys. That is really important to keep you engaged with brands. We did a lot of research around this area before deciding that QR is something we will use to deliver promotional messages or to incorporate into marketing tools we currently use."*

Moreover, learning grounds the process of new knowledge generation and exchange, which in turn provides the *"ability to think big with a small team, because mobile*

devices allow us to collect ideas anytime and anywhere, with simultaneous feedback and action," as concluded by interviewee 29. In addition, he adds:

Researching, promotional activity and service development: *"Firstly, like I said in the beginning, creativity is based on the flexibility that using mobile devices allows. But then having this new platform makes you think of new ways to attract customers and offer different products to your clients."* [I29]

Transforming capability is perhaps the key contributor to any SIPPc activity. As presented in the previous chapter, mobile technology deployment allows for the transforming of organisational processes, resulting in "*increased productivity*" [I13], "*improved and efficient process of organising workflow*" [I5], "*improvements in communication with staff, relationship maintenance and the organising of databases and the interchange of documentation*" [I4]. Overall, mobile technology deployment leads to "*flexibility in operations*" and "*quicker reactions*" in firms 6, 8, 9, 22 and 31. Interviewee 9 adds:

> *"Mobile technology has brought efficiency and flexibility into our processes. The speed of responding to a client relies on the convenience to deal with issues anywhere and anytime. Cost efficiencies come in the form of the decreased use of printing and paper materials, and time efficiency in terms of performing tasks, which are completely eliminated from the process now. In terms of having portable laptops and working from home, it really is convenient and gives us flexibility to plan our work schedules. Flexibility is key, really."*

Thus, the transforming capability supports improvements and innovative practices in managing internal administration and operational activities. This is consistent across all three clusters. However, particularly in Cluster A, mobile technology takes on an operational role and improves processes in internal and external areas, particularly clients' communication and administration, project management activities and developing promotional campaigns for clients and the firm's own branding:

> Consulting clients and the product development process: *"We put our time and money into pitching to our clients and also into the idea generation process. We do a lot of filming while generating ideas… All images and filming account*

managers and designers produce these movies using their mobile devices, and the integration of these into a system takes place instantly so that our clients can make prompt decisions and reduce the time spent on idea generation and objective formulation. The interactive capabilities of mobile technology in terms of the instantaneity of communication, response and feedback among our employees and in talking to our clients are essential components to which our firm pays particular attention." [I6]

Promoting the service/product: *"When we were creating a bespoke game for somebody, we were actually putting up poster displays around town, in bus stops and so on and so forth, and as a test we developed the NFC (Near Field Communication) tag on the back of the poster, so anyone with an NFC phone could tap the poster and they could then sit in the bus stop and just play the game to kill time. And then if they got a certain score, they would then be serviced with a discount voucher, which would be sent to that mobile device."* [I23]

Firms representing Cluster C extend the impact of the transforming capability to radical changes in organisational structure through the creation of new business divisions or the complete reorganisation of business models. The creative director and partner in firm 28 declares:

"I started this business with my partner in 2000 as a website design and development company, but looking at technological progress we just decided to take action immediately and turn opportunities offered by mobile and social media into cash for our business. So we became a digital agency specialising in mobile marketing and social media. No conventional websites are developed here anymore. It is outdated and does not bring us much money."

The mobilisation of processes in Cluster C is not only possible as a result of the transforming capability but also leveraging mobile technology resources. Accordingly, all firms representing Cluster C operate through databases synchronised and accessible "*via mobile devices*" [I3]. Firms from Cluster C focus intently on the in-house accumulation and heavy investment in developing mobile technology skills and MTI. Firm 3, in fact, produced its own in-house project-management software specifically for

mobile devices and cloud-based networks. In developing such MTI software, the initial aim of firm 3 was to improve its own cross-functional integration of data and embed the mobility function into data transmission and communication.

Leveraging mobile technology is practiced by all three clusters. Cluster A firms, for instance, focus on negotiating and acquiring external relationships that allow access to scarce mobile technology resources and competencies. Such leveraging also leads to service development, albeit through partnerships. The marketing director in firm 6 says:

> *"Partnering with our interactive partners to give our clients another experience can also be classified as process innovation for us. The whole idea behind that was not only to take that expertise but also to make the whole process as simple as possible… In the industry in which we operate, particularly concerning interactive digital campaigns, there is a lot work involved… If we partner with somebody, we simplify the process…"*

Divesting mobile technology resources through outsourcing is also common practice in firms representing Cluster A.

As stated in section 5.4., Cluster B invests primarily in MTI software as well as the renewal of mobile technology skills. Leveraging mobile technology resources stimulates innovation across all areas, starting with the management of operational processes and ending with service development processes. Interviewee 7 stresses that "*mobile technology gives me access to everything that used to be static, which now becomes mobile, such as information, skills, programs, experience.*" Such resources are then embedded into service development, service delivery or communication activities.

Finally, leadership as part of mobile technology capabilities is interlinked with leveraging mobile technology resources when it comes to SIPPc. In Cluster A firms, for instance, cost leadership strategy grounds the principles attributed to gaining access to mobile technology resources, and therefore they grasp the opportunity to improve processes involved in solving clients' problems through external networks, where advanced and costly mobile technology resources are needed. Otherwise, cost-free alternatives are acquired, which are then utilised to improve other operational activities such as service delivery and the promotion and management of operational processes:

> *"A lot of these mobile technologies actually do not cost a lot, or they might cost a lot but there are alternatives which do not cost a lot. Sometimes they even come free. We use these to improve communication, share documents on the go... Also mobile social media is used to promote our firm to business clients."* [I6]

Alternative investment policies and mobile technology leveraging mechanisms are strategically prioritised by Clusters B and C. Firms from Cluster B mainly purchase MTI software and work with partners on projects that require advanced MTI hardware. Cluster C firms, on the other hand, are proactive in their leadership practices and ensure that by combining and interacting with mobile technology capabilities, mobile technology resources are rare and difficult to imitate. Overall, all five mobile technology capabilities are involved in SIPPc. They are also equally important in improving existing processes and making radical transformations to business structures and models.

5.6.2.1. Summary

The author concludes that SIPPc areas are present across three clusters with Clusters B and C involving areas which are integrated with delivering and developing services. Cluster A, on the other hand, deploy mobile technology resources and exercises mobile technology capabilities within the internal operational processes, mostly for increasing operational efficiency.

5.6.3. The role of mobile technology capabilities in stimulating new and innovative solutions and outcomes

Following up on the discussion from the previous subsection, it is clear that in new service development processes creative service firms deploy mobile technology at least as an operational tool to facilitate the process by being an interface for sharing and exchanging knowledge and ideas (Clusters B and C). The previous subsection discussed mobile data management software developed by firm 3. Interestingly, this example illustrates how, when triggered by organisational problems in operational processes, a newly developed solution to manage an operational process (SIPPc) can organically lead to developing something new to be sold to business clients (SIPPd).

Table 37 presents a cross-comparative analysis across the three clusters on what innovation outcomes are produced as a result of mobile technology deployment. Additionally, this Table presents the examples of each SIPPd outcome and the consistency across interviewees' references by listing in brackets interviewees who mentioned each SIPPd outcome.

Table 37. Innovation service outcomes: a cross-comparative analysis of three mobile technology deployment clusters

Cluster A	Cluster B	Cluster
Not present	Extended existing services (8 interviewees: I1, I4, I7, I17, I19, I25, I27, I29) Example: integrated mobile web-design – I1, I4, I7, I17, I25, I27, I29	Extended existing services (3 interviewees: I12, I14, I18) Example: integrated mobile web-design – I12, I14, I18 Repackaged existing solutions (8 interviewees: I3, I12, I13, I14, I16, I18, I21, I28) Example: content for mobile web-design only – I21
	New lines of services (2 interviewees: I7, I1) Example: Mobile app designed to support and automate operational processes of the taxi company – I7	New lines of services (6 interviewees: I3, I12, I13, I14, I18, I28) Example: CLM (closed-loop marketing) – serving and equipping pharmaceutical distributors and sales agents with special mobile tablets that are used in communication with and serving General Practitioners – I3;

Firstly, sub-section 5.6.2. shows that firms representing Cluster A reject the concept of product innovation. Hence, Cluster A firms are not part of the discussion on SIPPd.

Secondly, Clusters B and C are actively involved in producing SIPPd by extending and improving existing service portfolios (clusters B and C) or by introducing new and unique services as part of their portfolio of offerings (Cluster C). To understand the role of mobile technology capabilities in SIPPd, Table 38 presents a cross-comparative analysis across the three clusters. The analysis is based on patterns discussed in sections 5.3., 5.4. and subsection 5.6.1.

Table 38. Role of mobile technology capabilities in product service innovation practices: a cross-comparative analysis of three mobile technology deployment clusters

	Cluster A	Cluster B	Cluster C
Mobile technology capabilities			
Leveraging mobile technology resources	Not applicable	Acquisition of MTI is based on a firm planning for modifications and changes as part of a solution to a client's problem. Accumulation of external relationships allows for extending existing service offerings	The higher MTI spending, the more service firms move towards producing and commercialising radical solutions – new lines of services. In-house creative orchestration of mobile technology resources (external skills are not used) to create unique combinations
Transforming		Transforming service offering through introducing incremental changes	New radical service solutions New business model
Learning		Learning supports acquisition and accumulation of mobile technology skills through sensing market opportunities and seizing	Learning is extended to advanced improvisation and experimentation
Solving problems		Responsive client orientation combined with technological orientation to solve clients' problems in an innovative way	Proactive client orientation based on advance practices of experimentation and technological orientation
Leading		Strategic alignment of mobile technology deployment for extending existing portfolio of services with an overall business strategy and a direction for investing in mobile technology resources.	Proactive strategic orientation reflects both strategic and operational decisions. Acquiring and accumulating an in-house portfolio of mobile technology resources has a direct impact on the strategic behaviour of the firm towards mobile technology deployment.

It can be now concluded that for firms representing Cluster B, which challenge the deployment of mobile technology deployment, and Cluster C, which lead the process of embracing mobile technology in SMEs delivering marketing, advertising, digital architecture and digital design services, mobile technology strategically facilitates both process and product innovation.

The difference between 'challenging' and 'leading edge' firms relates to the intensity of how mobile technology deployment drives product innovation. Discerning mobile technology as a strategic resource clearly has a basis for SIPPd. Hence, leadership is critical in producing SIPPd. In firm 1, representing Cluster B's mobile technology deployment, specific strategic options help in viewing mobile technology as a new type of service. Mobile technology is not simply another delivery and interaction channel, as in case of SIPPc. Thus, designing a mobile website, for instance, is not purely a transformation of traditional website content into a mobile format, but it is rather a different product which requires different content and even a different set of objectives. Information given by interviewee 3 (Cluster C) corresponds with Cluster B's results:

> *"Innovation for our firm happens when we have taken an aged or existing system and made it available to our clients on a mobile platform. But then this requires the transformation of content, too."*

All Cluster B firms create mobile websites for clients, not as part of their conventional website design and development solutions but as a separate type of service. For instance, firm 7 has several clients asking them to develop mobile websites, because these clients want to have a "*mobile format for a specific purpose – measuring the click through rate but most importantly understanding the location profile of mobile website visitors.*" As a consequence of practicing leadership, transforming and solving problems, Cluster B firms have extended their existing service portfolio.

In fact, in most cases, creative service providers produce SIPPd as a result of solving clients' problems (the solving problems capability). Hence, SIPPd is driven by clients' needs. This result corresponds with the findings on SIPPc. The business owner and managing director of firm 13 and the creative director from firm 28 (both Cluster C) state:

"We did design one application for one of our American clients when they came to us with a request to integrate digital into their brand. It is a large Fortune500 company. They have a product, which is an adjustable bed. We developed an app for them which works within an iPhone and controls the bed. You can set it; it works with the alarm bit. You can set your app, which is called Prodigy app. You can set it so that your mobile, your iPhone, the alarm will trigger it to wake you up, not with noise but it will wake you up maybe with massages or maybe raising the bed from there to there, slowly – that sort of thing." [I13]

"Another mobile app that was really successful is a maternity calculator app that we created at the request of the government. That was extremely well welcomed and we just are so proud of that product. It is nothing extremely creative but something which ranked extremely well in iTunes, and we couldn't be happier to demonstrate to our clients what they can do to engage with their customers. I mean, now we innovate in mobile apps, and we are even trying to start implementing complex hologram design apps." [I28]

Firms that are part of Cluster C adopt a proactive vision in line with mobile technology deployment (leading capability), in an attempt to reformat existing services by developing new ones. As an example, firm 3 has developed a mobile game named 'Parking Perfection'. This decision was based on technological trends, the expansion of mobile content (learning capability) and the firm's initiative to experiment with mobile devices and mobile technology software (learning and leveraging mobile technology resources capabilities). The 'Parking Permission' game is used as a promotional tool for the client to introduce their product, but it is also an interactive platform which gives end-users the ability to create an end-user database integrating location-enabled information, personal interests and personal contact information details. Since its launch, campaigns delivered through the mobile game as well as download rates for the game itself have been extremely successful. As a result, in firm 3, mobile games development has been embedded in the overall portfolio of services.

Moreover, as discussed in subsection 5.6.2., mobile technology capabilities help Cluster B firms to improve and change their service production systems, where service delivery through new channels such as mobile devices and mobile networks, service

development and maintenance through new a mobile interface and QR code scanning result in new efficiencies in terms of costs and lead times. The managing director from firm 27 states:

> *"Predominantly, we are producing mobile versions of websites. I currently have two websites in the build phase which will have mobile versions."*

Mobile technology as a new service production system is also evident in firm 12, representing Cluster C:

> *"Mobile technology is a brand platform that captures new ideas and publishes campaigns. Most of the work we are doing with mobile technology is mobile Web applications, messaging or mobile advertising. It sounds like most of the work focuses on communication. It is not just communication. I think this is something that the industry is looking at more and more. We actually provide valuable content as much as providing communication solutions. Yes, certain times and certain channels with your mobile by certain people will be used as a communication channel, so SMS or MMS or push-in applications within an application if the brand actually talks directly... Our involvement with mobile apps is obviously something novel to our agency and to our clients. It has also allowed us to extend the client portfolio and extend the overall landscape of our operation."* [I12]

Moreover, in Cluster C, new divisions devoted to digital services have been created and the entire business has been transformed (I3, I14, I16, I21 and I28) as a result of mobile technology deployment. As a result, the operational structures and strategic visions of these companies have been altered significantly. To produce SIPPd, Cluster B and C companies actively practice and deploy the transforming capability as part of mobile technology capabilities.

By maintaining a proactive strategic orientation towards mobile technology deployment, Cluster C firms have built strong and "*innovative capacity to take on existing technologies and platforms in the market, develop and take it on to a next level*" [I3], in order to introduce radical solutions to the market. Innovation capacity is built through practicing leveraging mobile technology capabilities (acquisition and

accumulation) and learning capabilities (experimentation). It was mentioned in the previous subsection that in the last two years, firm 3 has introduced a new database management software tool which operates as a mobile cloud-computing interface. Such software allows the firm's clients access to project details and updates as well as to follow-up on customer feedback. Firm 3 has also patented this mobile data management software, and further commercialisation of the invention is currently under development.

Mobile technology capabilities have a positive role in SIPPd in firms that invest heavily in purchasing new mobile technology and establishing strong MTI. In relation to SIPPd, MTI is discerned as a strategic resource, "*a resource that we lean on very heavily and use for the best advantage all of the time*" [I18] and which has "*drastically changed what we offer to our clients*" [I28]. Cluster C firms, therefore, are heavily involved in the in-house development of their own technological artefacts and software support systems. As a result, firms in Cluster C develop new gaming (firms 13 and 14) and mobile application (firms 14, 18, 21 and 28) solutions as part of their core services, along with the complete abolishment of traditional media services (all firms representing Cluster C). Leveraging mobile technology capabilities through acquisition results in the modification of service portfolios and is considered a priority for 'leading edge' firms.

5.6.3.1. Summary

The author concludes that Clusters B and C engage with SIPPd as a result of mobile technology deployment because of their commitment to expanding the mobile technology resources' base and variety of activities and routines performed due to commitment to innovate, experiment, solve client's problems' reactively and proactively.

5.7. Chapter Summary

This chapter has explained the main categories derived from the axial coding stage. Main conclusions are the following:

- Mobile technology is as a source of business benefits/values that derive from deploying mobile technology at work. In particular, the grounded theory analysis has identified four types of value of business value, namely functional,

social, creative and emotional. This contextual information proves that mobile technology are deployed by firms with different outcomes and different practices involved;

- Mobile technology capabilities represent a set of five substantive capabilities (leveraging mobile technology resources capability, transforming, learning, solving problems, and leading) which, through the transformation of existing processes, contribute to operational efficiency and effectiveness and also drive strategic change within business;
- Accessing or acquiring mobile technology resources and developing mobile technology capabilities underpin mobile technology deployment;
- The orchestration of mobile technology resources, through a unique combination of distinct mobile technology resources, facilitates innovative practices and other forms of strategic and operational outcomes. Hence three clusters of diverse practices have derived to demonstrate in details outcomes of mobile technology deployment;
- A relationship between the size of SMEs and the extent or commitment to mobile technology deployment is identified. However, it is only evident in one instance, Cluster C, where all medium-sized firms fit. Perhaps access to more resources as well as a number of employees within Cluster C firms allow these firms innovating and expanding their practices of mobile technology deployment beyond internal uses;
- Service innovation is regarded as something novel within organisational operational processes or as unique outcome that can be sold to the market. The service innovation definition includes a categorisation of process innovation (SIPPc) and product innovation (SIPPd);
- Mobile technology capabilities stimulate and facilitate innovative approaches to managing operational processes (SIPPc) across all three clusters representing diverse practices of deploying mobile technology. However, the creation of radically new and incremental service outcomes (SIPPd) is evident in Clusters B and C only.

The next chapter presents the substantive theory, which interconnects all core categories discuss in this chapter. In addition the author contrasts and compares the empirical results of this study with existing academic research.

Chapter 6. Mobile Technology Capabilities - Service Innovation Practices Relationships: Theory Development

6.1. Overview of the Chapter

The previous chapter have illustrated the main results of this thesis, emerged as a result of the axial coding. This chapter continues with the creation of the substantive grounded theory from the main categories explained in Chapter 5. The theory created in this research is substantive because it is developed within the defined contextual boundaries of this study, which were discussed in Chapter 4, section 4.5.

The discussion of the developed theory is complemented by the critical discussion, which compares empirical results and existing scholarly work. This helps to address this study's research aim and the four research objectives outlined in Chapters 1 and 4. Moreover, by locating the substantive theory developed in this study within existing knowledge domains, the opportunities to formalise the theory are specified. Hence, existing literature assists in evaluation of the theory developed in this study.

6.2. Integration of Core Categories

The approach and the concept of selective coding has been discussed in Chapter 4, sub-section 4.6.2.3. This section in particular introduces the main research outcomes, which were integrated using the conditional matrix tool but visualised using two instruments, the contextual map and the integrative diagrams. These two instruments helped the author to locate all of the core categories within two dimensions (Corbin and Strauss 2008):

- Vertically, representing the wider business context to relationships between the categories (the context type/group of categories, as presented in Chapter 5, section 5.1.);
- Horizontally, representing the cause-effect linkages between the categories (the process and outcomes type/group of categories, as presented in Chapter 5, section 5.1.).

6.2.1. The contextual boundaries to the theory

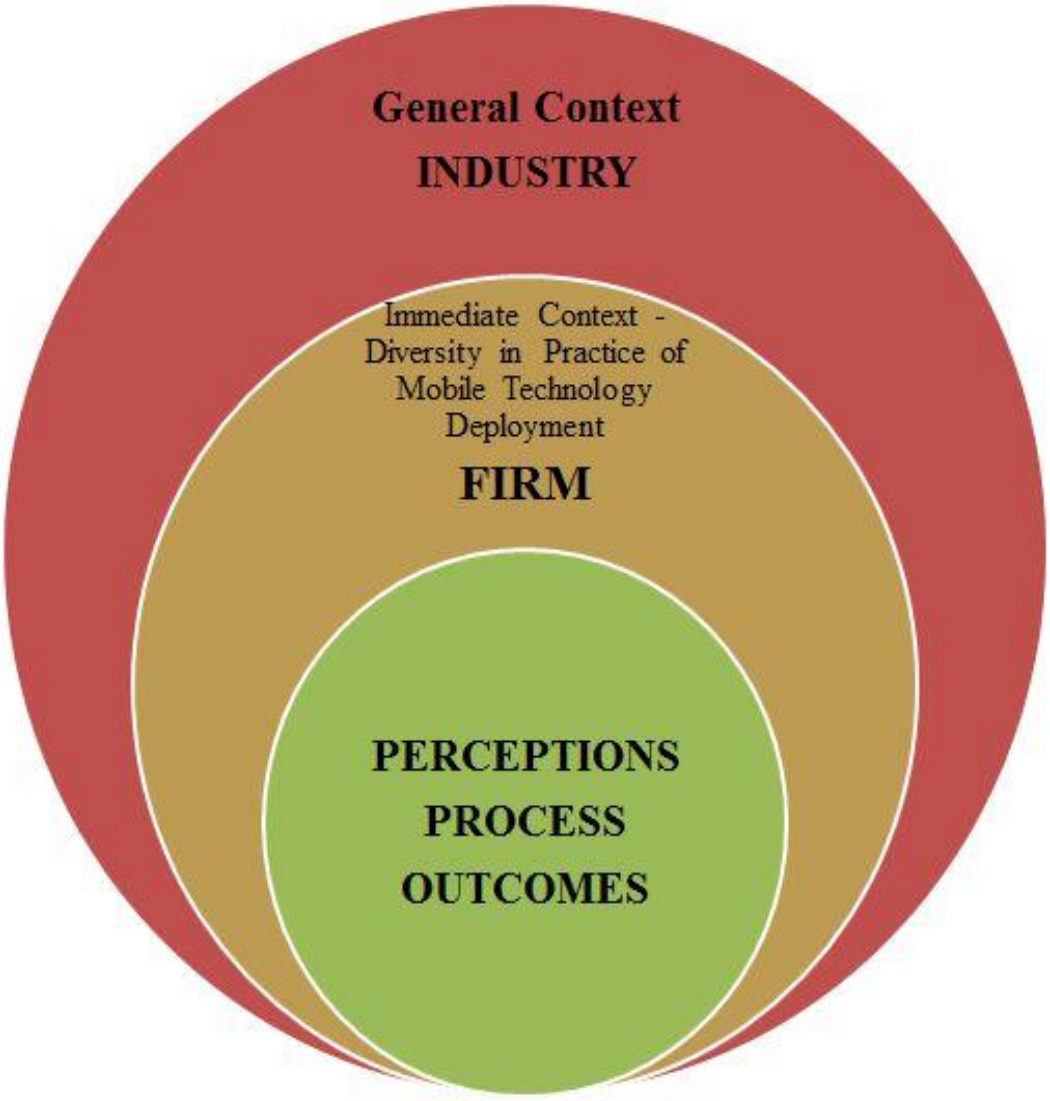
Diverse practice of mobile technology deployment identified in Chapter 5, section 5.4. shows that the context mediates the relationships between the process and outcomes. In this study the context is represented by two layers:

- Macro-environment, which shows distinctive features and benefits of mobile technology at work/organizational setting;
- Micro-environment, which represents the impact of the firm's characteristics on the process of mobile technology deployment (the process type/group of categories) and the role mobile technology capabilities play in service innovation practices (the outcomes type/group of categories).

Figure 16 illustrates the contextual map which recognises the general context to the process of mobile technology deployment and its relationships with the service innovation outcomes (SIPs). The general context represents interviewees' views about mobile technology deployment at work on a broader level beyond organisational boundaries – 'the context of deploying mobile technology'. Moreover, the situational map recognises the immediate context to interrelationships identified between the process of mobile technology deployment and outcomes, which are service innovation practices. The immediate context represents the diversity in practices' of deploying mobile technology across the sample. For example, one instance (Cluster C) of the relationship between the size of SMEs and the extent or commitment to mobile technology deployment is identified.

Moreover, as the previous chapter shows the immediate context affects interviewees' understanding and perception of service innovation and SIPs. Overall, the contextual map sets the boundaries to the cause-effect relationships identified between two research objectives studies in this thesis.

Figure 16. The contextual map of the mobile technology deployments process and its role in service innovation practices



6.2.2. Integrating the process and outcomes categories

The process of mobile technology deployment was the main focus of this study. The axial coding revealed that there is a cause-effect relationship between the core categories representing 'the process' of mobile technology deployment and the core categories representing 'the outcomes', which are two SIPs (SIPPc and SIPPd). In fact interactions between mobile technology capabilities and each SIP were identified in the interview transcripts (see Chapter 5, section 5.1.).

The core categories representing the process of mobile technology deployment are 'mobile technology resources' and 'mobile technology capabilities'. The core categories representing the outcomes are two SIPs, namely process service innovation practices (SIPPc) and product service innovation practices (SIPPd).

Chapter 5 (section 5.4. and sub-sections 5.6.2. and 5.6.3.) shows that the main findings emanating from this study are:

> Main Finding 1: *Depending on organizational commitment of creative service SMEs to mobile technology deployment, interaction between mobile technology resources and mobile technology capabilities results in transformation of operational processes, service offering and/or transformation of the business models.*
>
> Main Finding 2: *Depending on organizational commitment of creative service SMEs to mobile technology deployment, interaction between mobile technology resources and mobile technology capabilities can lead to both service innovation practices, in particular process service innovation practices only (Cluster A) and both process service innovation practices and products service innovation practices (Clusters B and C).*

Figure 17 illustrates the above listed findings of this study with the focus on linking mobile technology resources, mobile technology capabilities and SIPs, but without taking into account the contextual element emphasises in both findings.

Figure 17. A cause-effect model illustrating the role of mobile technology capabilities in service innovation practices

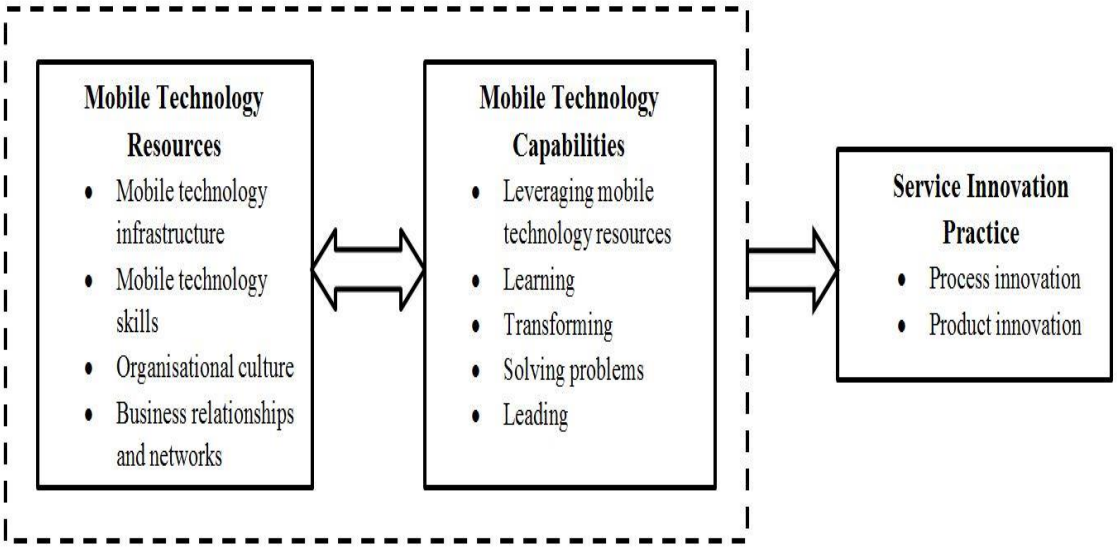
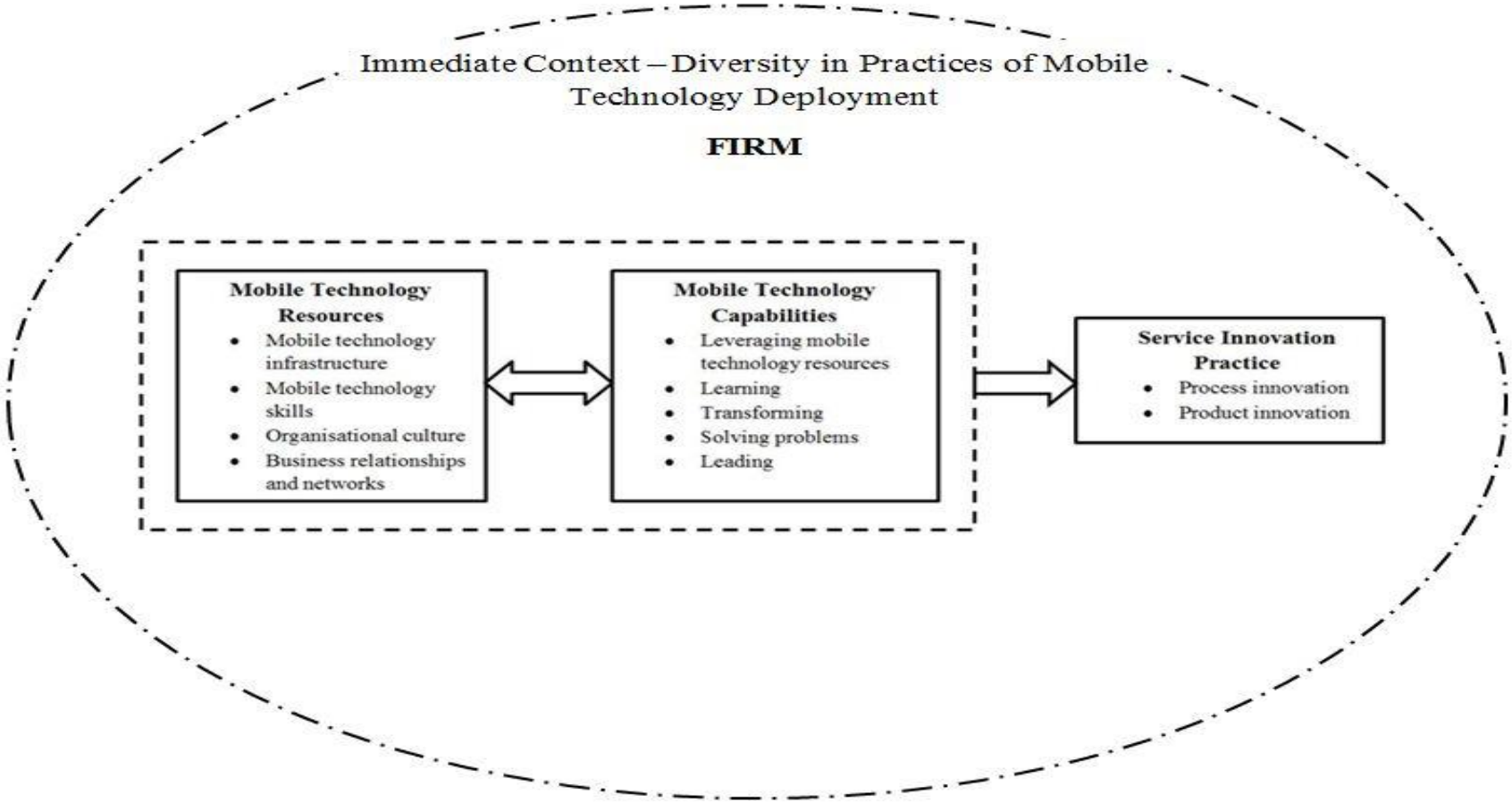


Figure 18. overleaf integrates the contextual map and the cause-effect model to provide the full illustration of the two main findings listed on the previous page. This diagram visualises the substantive theory of this study, which explains the role of mobile technology capabilities in service innovation practices.

Figure 18. A Subtantive Theory of the Mobile Technology Capabilities - Service Innovation Practices Relationships



6.3. Evaluation of Findings against Literature

6.3.1. The context of deploying mobile technology

Extensive but nonetheless embryonic academic research (Balasubramanian et al. 2002; Fortunati 2001; Jarvenpaa 2000; Jarvenpaa et al. 2003; Jarvenpaa and Loebbecke 2009; Nielsen and Fjuk 2010; Tarasewich et al. 2002) recognises the importance mobile technology has on the transformation of social existence and business models. In actual fact, the degree of such a transformation depends on the conceptual understanding of mobile technology.

One group of researchers (Tarasewich et al. 2002; Wiredu 2007; Nielsen and Fjuk 2010; Mohelska 2010) considers mobile technology as an extension of the personal desktop computer, where mobile devices and platforms maintain continuity and fluidity in processes performed on fixed networks and stationary desktop IT. Continuity and fluidity come from ability to communicate and exchange information irrespective of the mobile technology user's location and irrespective of the time when this exchange takes place. However, according to both Tarasewich et al. (2002) and Nielsen and Fjuk (2010), such a transmission is limited functionally because of the technical constraints inherent in mobile technology.

In this study interviewed practitioners view mobile technology as a novel and unique category of technology because of its core distinctive factor – being mobile. Hence, this thesis contributes to a second group of scholars (Jarvenpaa 2000; Fortunati 2001; Balasubramanian et al. 2002; Jarvenpaa et al. 2003; De Reuver et al. 2008; Feijóo et al. 2009; Jarvenpaa and Loebbecke 2009), who view mobile technology as a fundamentally different technology to fixed networks and stationary desktop IT.

Furthermore, this study links the physical manifestation of mobile technology with the technology-in-deployment perspective, and defines mobile technology in the organisational/work context as a manifestation of mobile technology categories to create and deliver new business opportunities – opportunities that are not restricted by physical boundaries of location and time.

This study found that in the organizational/work context the core feature that distinguishes mobile technology, being mobile, is linked to various factors that triggers

the use of mobile technology at work. The extensive literature around portability of mobile technology (Jarvenpaa and Lang 2005; Liang et al. 2007), the personal nature of mobile technology (Fortunati 2001; Jarvenpaa and Lang 2005; Wehmeyer 2007) present consistent to this thesis results, which are: portability, the personal nature of mobile technology and the accessibility of individuals to communication are key factors that differentiate mobile technology from fixed networks and stationary desktop IT.

The external context factors which push or constrain the deployment of mobile technology are explored in the existing literature (Jarvenpaa et al. 2003; Jarvenpaa and Lang 2005; Snowden et al. 2006; Koenigstorfer and Groeppel-Klein 2012). However, the majority of studies focus on deployment of mobile technology as a personal tool, and not as work tool. The deployment of mobile technology at work primarily focuses on the benefits side (Sorensen 2011; Karanasios and Allen 2014; Pauleen et al. 2015) rather than constraints. Even the study written by Karanasios et al.'s (2014) that aims to explore contradictions of using mobile technology in mobile work discusses work-life balance and technical failures rather than issues like privacy and the fast pace of changes in mobile technology, its range and its technical features. However, one study (Harris and Patten 2014) identifies the importance of security and privacy matters to SMEs which decide to deploy mobile technology. However, Harris and Pattern's (2014) study is conceptual paper as opposed to this study which maps the set of barriers and push factors that affect mobile technology adoption and deployment at work as identified by professionals working in SMEs.

Last but not least, the results on the context of using mobile technology at work that deployment of mobile technology results in a set of four main benefits/values for the businesses. These are functional, social, creative and emotional. Woodruff (1997) uses similar labels to name a system of values which describes goal-based satisfaction linked to tasks and purposes. However, there is no existing research that maps values or benefits resulting from mobile technology deployment.. In turn, some researchers (Wu and Wang 2005; Snowdon et al. 2006; Park and Kim 2014; Muk and Chung 2015) by adopting the technology acceptance model to study mobile technology adoption, conceal the benefits behind the terms 'ease of use' and 'usefulness'. Perhaps the functional values of convenience, the cross-functionality of devices and the intuitive interface of mobile technology might result in easy to use mobile technology categories.

Usefulness of mobile technology lies within its creative, social and emotional values. On the other hand, Varnali and Toker (2010) provide a summary of research on mobile marketing and list four main values that contribute to consumer acceptance of mobile marketing. These are utilitarian, hedonic, functional and emotional values. However, no details are given on what constitutes each value. Moreover, all studies listed in this paragraph adopt the technology acceptance model within the consumer context research and not looking at the organizational/work setting. Hence, the present study is not only the first to map the unique values, which derive as a result of deploying mobile technology at work.

The three values explored in this study, namely the functional value, the social value and the emotional values are covered as distinct fragments in the following studies which explore the deployment of mobile technology at work. Firstly, past studies by Nysveen et al. (2005), Wu and Wang (2005), Snowdon et al. (2006), and Karanasios and Allen (2014) proclaim mobile technology is a convenient to use and cross-functional in integrating and exporting data across various technologies; thus enabling relevant and immediate communication and the exchange of information (Snowdon et al. 2006; Spiegelman and Detsky 2008). Secondly, Rochford (2001), Spiegelman and Detsky (2008), Nam (2014) and Pauleen et al. (2015) conclude that mobile technology allows flexibility and enable balance between personal life and work. Spiegelman and Detsky (2008) in particular talk about imbalances which deployment of mobile technology creates. Consistent with Spiegelman and Detsky (2008) the interviewees from this study refer to imbalances between personal life and work as ‘workaholism’ and the effect of laziness.

Finally, the creative value is not mentioned by previous studies as one of the benefits of using mobile technology at work or as a personal tool. Lu et al. (2005) looked at personal innovativeness as an antecedent to the adoption of mobile services, which is seen as helping individuals to use mobile technology functions and perceive mobile services as useful while not actually affecting the adoption of mobile services. This study finds that mobile technology is a tool that helps to boost creativity by breaking down organisational constraints of time and location that commonly restrict creative thinking (West 2002). Moreover, results presented in Chapter 5, section 5.2. show that mobile technology facilitates flexibility in managing workload. According to Menzel et

al. (2007), flexibility leads to more creative results in organisations. The survey study, written by Karjaluoto et al. (2014), included the personal innovativeness (creativity boosting) as one of the variables which indicate SMEs' acceptance of mobile customer relationship management systems. However, results of Karjaluoto et al.'s (2014) study shows no relationships between the creativity boosting and the use of mobile customer relationship management systems. This study indicates the opposite and further explorations as well as generalisation are required.

6.3.2. Conceptualising mobile technology capabilities

This study identified key categories that ground mobile technology deployment process and diverse practices across creative SMEs, which deliver marketing, advertising, digital architecture and digital design services. Interaction between mobile technology resources and mobile technology capabilities results in transformation of operational processes, service offering and/or transformation of the business models. In the last decade, existing scholarly work (Axtell et al. 2008; Hameed 2003; Lee et al. 2007; Sheng et al. 2005) including the most recent research publications (Bharadwaj et al. 2013; Johns and Gratton 2013; Pimmer and Pachler 2013; Karanasios et al. 2014) has analysed the work practices involved in integrating mobile technology into business activities, revealing organisational benefits and constraints caused by mobile technology and the current state of institutional developments responsible for mobile network availability, speed and efficiency. This study contributes to that body of research by confirming a number of claims and opposing others. In the next two subsections, these similarities and differences are addressed, first by discussing the process of mobile technology deployment and then by introducing and comparing the new concept of mobile technology capabilities to the existing notion of IT capabilities. Hence, the literature on IT capabilities also contributes to a critical and comprehensive discussion.

6.3.2.1. How do SMEs utilise and deploy mobile technology: Diverse practices

This study discovers that creative service SMEs deploy mobile technology extensively with varying degrees of integration into business practices. Mobile technology resources are critical inputs into a mobile technology deployment process that includes transformed but existing activities such as communication, project management, service development and delivery. Three clusters reflect distinct organizational commitments to leveraging mobile technology resources. Although past research has overlooked

individual elements of mobile technology resources and their contribution to organisational performance, no studies have provided firm clustering, detailing differences in the relation to different elements of mobile technology resources. As such, the identification of clusters represents an original contribution of this study. Moreover, the relationship between organisational commitment to leveraging mobile technology and the size of the firm has been identified. Number of studies explore the use and adoption of mobile technology by SMEs (Talati et al. 2012; Quigley and Burke 2013; Heilig and Vob 2015). However, the only consistent results across these studies and this thesis is that SMEs favour mobile technology deployment due to a low cost of mobile technology categories and a low cost of maintaining the systems and integration across the firm. This thesis shows that mobile technology are indeed low cost resources; however, firms which are medium in size tend to heavily invest in establishing advanced systems, purchasing sophisticated software to deliver unique and innovative solutions to their clients.

The author concludes that although mobile technology are a low cost technology, advanced practices of mobile technology deployment require investments and perhaps the medium-sized enterprises are established and have an excess of such investments to leverage mobile technology resources as opposed to micro and small businesses. According to Jones et al. (2014b) micro and small enterprises tend to minimise their risks but maximise potential at the same time. In line with Jones et al. (2014b) conclusions, this study shows that SMEs grouped as Clusters A and B firms take advantage of mobile technology by investing into i.e. cost-free alternatives or mobile technology software only but only Cluster B firms still attempt to maximise potential of such investments by deploying them to transform their processes and services.

Nevertheless, existing research studies cite various but individual elements of mobile technology deployment activities. Firstly, a large number of studies explore the working on the go phenomenon in the general business setting (Axtell et al. 2008; Hardill and Green 2003; Hislop and Axtell 2007; Kietzmann et al. 2013; Kristoffersen and Ljungberg 2000) and in the context of SMEs (Whyman and Petruscu 2014). Currently, mobile work has overtaken office-based working, with "*office professionals now working away from their desks 50 to 90% of their time*" (Axtell et al. 2008, p. 902). According to Daniels et al. (2001), teleworkers work remotely at different locations and

maintain knowledge creation and communication via information and communication technologies. Mobility extends the possibilities of taking work beyond physical premises and allows employees to complete work-related tasks and maintain communication whilst on the move. Whyman and Petruscu's (2014) conclude that workplace flexibility is particularly effective in the SMEs context because it boosts creativity and employees' performance. This study shows that flexibility in the workplace, business models and management of the projects is one of the main reasons for deploying mobile technology. Whyman and Petruscu's (2014) results explain why this is the case and even more so, explains why there is a relationship between mobile technology deployment and service innovation practices in creative SMEs.

Project management on the go represents a key activity in the mobile technology deployment process. The transformation of office-based project management to mobile project management has led to operational efficiencies through increased productivity (Sheng et al. 2005), operational flexibility (Hameed 2003; Lee et al. 2007; Sheng et al. 2005) and effective communication with external and internal parties (Jarvenpaa and Lang 2005; Sheng et al. 2005). However, Przybylski and Weinstein's (2013) recent study reveals that mobile devices cannot be used when discussing critical aspects of a business in comparison to face-to-face human interaction, where a close dyadic relationship is established. Przybylski and Weinstein's (2013) study discusses such results in the context of large-size businesses. On the contrary, this study does not illustrate any interference caused by mobile technology used for communicating and managing relationships. In fact, mobile technology is found to enrich communication and the associated experience by helping to simultaneously communicate information of different natures and formats (instant text, voice, video, images). Once again this could be true due to the fact that SMEs maximize potential using low cost alternatives, whereas cost is not of importance to large-size firms (Przybylski and Weinstein 2013). No studies were found to prove or argue this set of results in the context of SMEs.

Creative service SMEs firms incorporate mobile working, either as a remote way of performing activities such as communicating and using social media, or for teleworking. Similar to Daniels et al. (2001), teleworking in this study implies spending time travelling and working at different but remote locations. In addition, mobile working is reflected in establishing an adhocratic organisational culture. Kietzmann et al. (2013)

state that mobile technology is used mainly to manage the collaborative processes of knowledge sharing and creation. The results of this study agree with such a statement. Moreover, there are four types of structure, namely bureaucratic, anarchic, idiosyncratic and adhocratic, which represent the coordination of activities within mobile working teams. In line with Whyman and Petruscu (2014) paper on the importance of flexible working in the context of SMEs, this study reveals that deployment of mobile technology is accompanied by and enables adhocratic organisational setting. An adhocratic setting is found to empower employees and "*dedicated mobile workers collectively generate innovative processes that will maximise performance measures for the firm*" by applying a controlled level of risk to transform organisational performance radically or incrementally (Kietzmann et al. 2013, p, 291). In this study empowering employees, instilling operational and strategic ("*increasing spatial, temporal and contextual*" (Kietzmann et al. 2013, p, 294)) flexibility and, as a result, the creation of innovative practices constitutes organisational culture as part of a mobile technology resources bundle. In fact, adhocracy is practiced by Clusters B and C which both not only transform operational processes, but also service offerings by incorporating mobile technology into existing services and developing completely new mobile services and products. Moreover, Johns and Gratton (2013, p. 4), in their article published in the *Harvard Business Review*, elaborate that in a few years' time "*more than 1.3 billion people will work virtually*," with existing models combining:

- Virtual freelancers, who establish their own "one-stop shop" to service different firms with different skills (this is found to be a common practice for the marketing and advertising industry, where firms outsource various specialised work to freelancers; Jones and Jayawarna (2010) name such practice of hiring temporary employees as bootstrapping technique for accessing other than financial resources; Cluster A firms are found to be particular adopters of this practice. But then surprisingly three freelancers participated in this study (I5, I8 and I25) still used physical spaces to conduct meetings and discuss projects. Virtual freelancers represent micro businesses only.
- Virtual colleagues, with mobile technology serving communication activities at its core (all three clusters experience this model). Once again this is found

to be true for freelancers and firms grouped as Cluster A as these firms rely heavily on external networks and partnerships to gain access to scarce resources and outsource mobile-specific solutions due to the lack of expertise and knowledge.

- Virtual collaborators ("*a boutique of collaborative workspaces*" (Johns and Gratton 2013, p. 4)), with innovation as a primary focus when using mobile technology to boost creative sharing and knowledge creation (this model is particularly adopted by Cluster C firms, where the benefits of cost reductions associated with having less physical office space are extended to innovative solutions). Cluster C firms, however, represent virtual collaboration within the single organisational entities. Cluster B firms, on the other hand, tend to collaborate and partner with other firms in order to solve clients' problems and in order to generate tacit knowledge around mobile technology deployment.

Overall the above discussion just shows the relationships between the size of the firms and its commitment to deploy mobile technology. Cluster C outperforms the two other clusters in an attempt to advance mobile technology deployment practices and to gain a leading industry position. Perhaps the reason for this success is that Cluster C firms prioritise creativity as a key input into mobile technology deployment through teleworking and mobile working activities that are part of an adhocratic and a proactive organisational culture. Feijóo et al. (2009) agree that creativity is a condition for firms aiming at gaining a foothold in a mobile business. Otherwise, an assumption could be that available finanical resources which enable medium-sized firms to be independent of business network and partners and focus on leading the innovative practices rathern than following. Cluster A firms, however, are less reluctant to engage with new technological trends. The author cannot make an assumption that this is due to lack of sufficent resources because firms grouped as Cluster B in most cases have similar resources and interviewees 5 and 25 represent the signle-employee firms (freelancers) but they still do push the boundaries and find ways to deploy mobile technology beyond internal purposes. The only explantion which comes to the author's mind is that Cluster A firms tend to be comfortable with their position and, therefore, not push boundaries and maximise potential. Whereas firms B tend to adopt an entreprenurial orinentation

(which in this study is represented by learning and technological orientations that in Cluster B firms are characterised by the individual extend meaning initiative to embracy latest technology comes as an individual initiative, in the most cases business owners' initiatives to drive business further. Elbeltagi et al. (2013) found that the owner-managers in SMEs initiate and drive the adoption of IT. Most firms representing the Cluster B firms are in fact business owners. Hence, this could be an explanation to diverse practices across the same size firms (Clusters A and B).

Additionally, a study by Alvarez et al. (2011) finds that mobile technology depending on functional and technical features is an effective tool for collaborative processes in an educational context. Thus, tablet computers with touch screen functionality are better facilitators of idea generation than laptops. This study does not provide such a detailed insight into the value created by deploying a distinct type of mobile technology, but the author agrees with Alvarez et al. (2011) and Pimmer and Pachler (2013) that mobile technology enables ideation through cross-contextual collaborative learning and knowledge sharing.

In relation to activities as part of mobile technology deployment in line with this study's results, various authors (Jarvenpaa and Lang 2005; Sheng et al. 2005) identify communication and the coordination of operational processes through the automation of information sharing as key purpose of using mobile technology. Moreover, although studying a different sector but SMEs, a report by Farris and Medema (2012) supports this study's findings, by arguing that time efficiency and effective decision-making are critical outcomes of activities that involve mobile technology deployment (managing projects on the go (6.2.2.) cites managing time effectively and effective decision-making as key benefits of using mobile technology). In particular, the results of this study correspond with the following arguments:

> *"When a procedure and work order information are recorded on a mobile device, there is little or no lag time for recording it in enterprise information systems. Reducing information lag times also improves collective situation awareness, which can greatly improve accurate and timely decisions by stakeholders. Research indicates that wireless technology reduces group decision making time by 30 to 40%."* (Farris and Medema 2012, p. 3)

Existing research (Rochford 2001; Hameed 2003; Lee et al. 2007) cites cost-efficiency as a benefit of utilising mobile technology through faster responses to customer needs and lower investment required to maintain physical office premises. Nevertheless, no research apart from this study has demonstrated that cost efficiency originates directly from MTI being affordable with cost-free alternatives to deploy mobile technology for effective and flexible operational information processing and management (Cluster A). External relationships are found to be particularly critical in gaining access to scarce mobile technology resources, including MTI and mobile technology skills, although no empirical studies around mobile technology resources confirm these results. Studies on fixed networks and stationary desktop IT used in an organisational context (Huang et al. 2006; Ong and Chen 2013; Ong and Chen 2014; Wade and Hulland 2004; Wang et al. 2012) illustrate similarities between MTI and fixed networks and stationary desktop IT in a cost-effective way, to improve operational processes and the importance of external consultants and partnerships in accessing required IT systems, hardware and software.

Research by Ross et al. (1996), Lacity and Willcocks (1998) and Wang et al. (2013) stresses that partnering with clients and external firms, and maintaining a collaborative culture internally in an organisation, not only helps to build an IT infrastructure but also strongly influences firms' expertise in planning, developing and deploying said IT infrastructure. Technological change, according to Macpherson et al. (2003), enables exchange of knowledge and builds a culture of collaboration in SMEs' specifically. This argument is in line with the results of this study. Furthermore, this study's results confirm Farris and Medema's (2013) claims that the benefits of establishing and investing in building a mobile technology system (MTI) are easily quantifiable. Interviews specify that mobile technology hardware particularly helps with the measurability of outcomes and any subsequent reflection on returns on investment.

No existing research in relation to mobile technology deployment describes the composition of mobile technology resources as an interactive system of skills, relationships, MTI and organisational culture. Nevertheless, applying RBV as a theoretical basis, studies on fixed networks and stationary desktop IT identify similar groups of resources to form an overall bundle of IT resources (Bharadwaj 2000; Chen and Tsou 2012; Huang et al. 2006; Ong and Chen 2013; Powell and Dent-Micallef 1997; Ross et al. 1996; Wade and Hulland 2004; Wang et al. 2012), with the exception

of organisational culture. Organisational culture either complements IT resources (Zhang and Tansuhaj 2007) or it is referred to by a different conceptual name. Thus, Wade and Hulland (2004) refer to organisational culture as a system of information systems, planning and change management practices and market responsiveness. On the other hand, Wang et al. (2013) label organisational culture that grounds the process of fixed networks and stationary desktop IT deployment as a 'governance mechanism' which leads and manages the use of IT resources.

Similar to IT resources (Ross et al. 1996; Bharadwaj 2000; Wade and Hulland 2004; Huang et al. 2006; Chen and Tsou 2012; Wang et al. 2012; Ong and Chen 2013), mobile technology resources include MTI, the mobile technology base of the firm, mobile technology human resources comprising skills, competences and expertise that also form the mobile technology knowledge base of the firm, and relationships. However, different authors distinctively conceptualise relationship resources with IT resources. Ross et al. (1996), Wade and Hulland (2004) and Chen and Tsou (2012) only consider internal relationships between employees, technical specialists and business management teams as critical to the orchestration of IT infrastructure and skills. Nevertheless, this study is consistent with Powell and Dent-Micallef (1997), Bharadwaj (2000), Wang et al. (2012) and Ong and Chen's (2013) findings, in that both internal and external partnering relationships are critical to the successful deployment of mobile technology because of access to MTI and skills as well as the opportunity to collaborate (Clusters A and B) and share risks (Cluster A) associated with investment in or integrating within the established processes of new mobile technology.

Considering investments in MTI and building mobile technology skills in an organisation, this study concludes that Cluster C exercises an internally-driven mobile technology deployment process where the firm attempts to develop in-house skills for successful mobile technology employment. The medium-size of Cluster C firms just confirms that additional resources and investments could be a critical input to decision of deploying mobile technology more strategically rather than only operationally (cluster A). As emphasised earlier, Cluster C firms invest heavily in purchasing and developing their own mobile technological hardware and software (in-house development of resources in Rieple et al's (2005) words) which drives innovation and aims at developing radical solutions. On the contrary, Clusters A and B endeavour to

develop strategic collaborations in order to gain access to scarce resources (development of resources within strategic partnerships in Rieple et al's (2005) words). According to Belderbos et al. (2010), firms that employ fixed networks and stationary desktop IT for explorative purposes tend to build external collaborations for resources and capabilities interchange. However, for Cluster A, collaboration does not trigger explorative practices as in the situation with IT deployment (Belderbos et al. 2010), whereas clusters B and C aim at developing an 'intrapreneurial' culture (Menzel et al. 2007), empowering employees in the organisation to seize opportunities for value creation in the form of innovation, rather than purely relying on benchmarking, as well as forming partnerships.

Despite the fact that differences across the firms appear to be critical for comparative analysis, all three clusters have similarities worthy of mention. All 28 firms that deploy mobile technology demonstrate correspondence within routines and decision-making practices as part of mobile technology deployment. Particularly, planning is embedded within the mobile technology deployment process in all three clusters. Moreover, planning involves market intelligence generation through researching a market and assessing resources available to firms as well as the diagnostics of organisational practices. For instance, firms from all three clusters practice benchmarking to follow and learn from the best practices of mobile technology deployment across industries. According to Durst et al. (2012) knowledge management is an important aspect of all SMEs' operations and strategic decision-making. Hence, all 28 SMEs which deploy mobile technology share these common routines.

Cluster A firms deploy mobile technology as an operation-enabling tool. This approach is consistent with Lehmann and Fernandez (2007), who consider fixed networks and stationary desktop IT as a single aspect of the various enterprise functions. In this study, these functions relate to the automation of information entry and communication externally and internally. On the other hand, Clusters B and C transform organisational activities as a result of mobile technology deployment, culminating in remote cross-functional communication and decision-making. The similarities between Cluster B and C in their commitments to mobile technology deployment show that investments are not critical to deploying mobile technology strategically. It is the culture associated with experimentation and embracing technology, which leads to innovation practices.

Moreover, Lu and Ramamurthy (2011) emphasise that the fixed networked and stationary nature of IT infrastructure is an obstacle to developing organisational agility. Conversely, clusters A, B and C demonstrate that an 'ensemble' view of mobile technology deployment process, which integrates technical, people and data aspects of the process, facilitates the development of organisational, particularly operational, adjustment agility (Lu and Ramamurthy 2011). Operational adjustment agility allows creative firms to cope with rapid changes in the market through the internal flexibility of business processes which, as discussed earlier, enable innovation. Based on Whyman and Petruscu (2014) this is not a surprising finding in the context of SMEs, which explains SMEs' willingness to adopt and deploy mobile technology rather than fixed networks and stationary desktop IT.

In meeting the research objective 1, the findings from this study suggest that mobile technology deployment is grounded in establishing an interactive system of mobile technology resources, where infrastructure, skills, relationships and culture interact to enable operational efficiencies and/or create new solutions. This is similar to the fixed networks and stationary desktop IT deployment process, where similar 'material' agency (MTI) is integrated with 'human' agency (skills, culture, relationships) (Kroenke 2012; Lehmann and Fernandez 2007). Moreover, similar to IT, mobile technology transforms existing activities (Mishra et al. 2013; Ong and Chen 2013; Peppard and Ward 2004; Sambamurthy et al. 2003) by advancing and changing activities that were previously transformed by the deployment of fixed networks and stationary IT.

Nevertheless, depending on the strategic direction/commitment a firm adopts, mobile technology deployment is a distinctive process from fixed networks and stationary desktop IT deploymnet. Firstly, organisational agility is evident in all SMEs deploying mobile technology. Organisational agility is considered a problematic aspect for fixed networks and stationary desktop IT deployment (Lu and Ramamurthy 2011) but a normal condition for mobile technology deployment. Secondly, building innovative capacity is based on a SME's orientation toward building and developing in-house resources rather than gaining access to external resources, which is the case when deploying fixed networks and stationary desktop IT. Moreover, the deployment of of mobile technology enables the creation and deployment of distinctive mobile technology capabilities which, in combination with mobile technology resources, result

in attaining a competitive position. This finding corresponds with all scholarly work studying relationships between IT capability and firm performance (which includes the 'innovation' in particular) (Powell and Dent-Micallef 1997; Bharadwaj 2000; Chen and Tsou 2007; Ong and Chen 2013).

6.3.2.2. Conceptualising mobile technology capabilities

In line with Jones et al.'s (2014a, p. 142) claim that "*resource alone is not source of value*," this study illustrates that what matters is the deployment of resources. According to the literature review of studies that explore organisational capabilities (Chapter 2), a capability implies the ability to combine resources and competences and then deploy them advantageously (Day 1994). Strangely, when defining mobile technology capabilities, the interviewees articulated their views in line with Day's (1994) conceptualisation. Mobile technology capabilities are a firm's unique practices used in orchestrating mobile technology resources to create a business advantage or benefit. No currently published research has introduced the concept of mobile technology capabilities. Therefore, this definition is unique and the first to be presented. However, this definition is in line with RBV studies (Day 1994; Song et al. 2008; Ramaswami et al. 2009), according to which capabilities reside within different practices, such as service delivery, marketing or new product development.

Conceptually close to studies on mobile technology deployment, the body of research on IT capabilities, which explores and explains the use of fixed networks and stationary desktop IT, is well-established (Bendoly et al. 2012; Bharadwaj 2000; Bhatt and Grover 2005; Chen and Tsou 2007; Huang et al. 2009; Ong and Chen 2013; Sambamurthy et al. 2003; Tarafdar and Gordon 2005; Wade and Hulland 2004; Wang et al. 2012; Zhang and Tansuhaj 2007; Chae et al. 2014; Chen et al. 2015). Nevertheless, consensus regarding a definition of IT capabilities has not been reached, as two approaches are employed to conceptualise IT capabilities. The majority of information research scholars (Bharadwaj 2000; Sambamurthy et al. 2003; Bhatt and Grover 2005; Tarafdar and Gordon 2005; Chen and Tsou 2007; Zhang and Tansuhaj 2007; Huang and Chen 2009; Bendoly et al. 2012; Ong and Chen 2013; Chae et al. 2014) define IT capabilities as the composition of those related to IT use resource categories, namely the IT technical base, IT skills and IT management. By introducing the definition of mobile

technology capabilities stated above, this study disagrees with conceptualising mobile technology capabilities as a combination of mobile technology resources only.

Conversely, mobile technology resources are part of mobile technology capabilities, because they represent tools for effective learning and creativity. This finding, however, corresponds with the second group of information research scholars (Benitez-Amado and Walczuch 2012; Wade and Hulland 2004; Wang et al. 2012; Chen et al. 2015), who define IT capabilities as "*a firm's ability to mobilise and deploy IT resources effectively to perform*" (Wang et al. 2012, p. 329) activities such as strategic IT planning, information system development, leveraging and the use of information systems and the management of IT functions and IT assets.

In order to identify activities relevant to mobile technology capabilities, it is necessary to understand that, based on Wernerfelt (1984) and Day (1994), capabilities are routed in organisational processes, decision-making systems and managerial practices. This research follows a similar way of thinking, and as a result it identifies a set of mobile technology capabilities through a detailed understanding of the mobile technology deployment process. Particularly, activities involving mobile technology are identified through the further analysis of decision-making practices and routines to map mobile technology capabilities. In meeting the research objective 2, the author concludes that mobile technology capabilities are found to form a set of the following capabilities that enable firms to creatively and distinctively combine and deploy mobile technology resources: (1) leveraging mobile technology resources capability; (2) transforming business operationally and strategically capability; (3) learning capability; (4) solving problems capability and (5) leading capability.

Leveraging mobile technology resources is a key capability and it is also found to be critical part of IT capabilities. All studies that define IT capabilities as a bundle of various IT-related resources imply that IT capabilities include the ability to reconfigure and acquire IT resources. This study explains this point further by adding that leveraging can be done through the acquisition, accumulation and outsourcing of mobile technology resources. Differences could be explained by the contextual setting of the study, SMEs in particular. Bayrak (2013) identified relationships between a small size of the firms and different practices to build IT infrastructure emphasising that

outsourcing is the common way to leverage IT resources. Based on the available investments, SMEs tend to maker different decisions regarding establishing the firm's resource base. This is found to be true in this study as the medium-size firms (Cluster C) tend to build their own base of mobile technology resources, by creating own unique resources. Whereas the smaller firms tend to outsource (Cluster A) or acquire available (Cluster B) mobile technology resources.

Both the accumulation and acquisition of mobile technology resources can be grounded in organisational learning. Lee (2001) and Wang et al. (2012) stress the value of learning in IT deployment. Andreu and Ciborra (1996) add that learning facilitates the integration of IT resources into organisational processes and activities. This study finds that in order to transform business and lead to competitive advantage, mobile technology resources can be effectively leveraged and creatively spanned by establishing learning orientation as part of organisational culture as well as through a learning capability that integrates scanning knowledge into the external environment, acquiring knowledge externally and internally, assimilating knowledge through formal and informal sharing mechanisms and using new knowledge to transform processes or develop new services. In fact, Calantone et al. (2002) stress that learning orientation is a foundation to building a firm's innovation capability. Hamburg and O'Brien (2014) show the similar results within the context of SMEs. Macpherson et al. (2003) also emphasise that learning-by-doing and learning-by-interacting create opportunities for development and product innovation in SMEs. Andreu and Ciborra (1996) add, in the context of IT capabilities development, that learning is the only means of sensing and integrating technology into an organisation.

The transformation of processes through the integration of IT into operational processes is a well-known fact (Bharadwaj 2000; Sambamurthy et al. 2003; Zhang and Tansuhaj 2007; Huang and Chen 2009; Lu and Ramamurthy 2011; Bendoly et al. 2012; Ong and Chen 2013; Chae et al. 2014; Chen et al. 2015). It is also listed by Nguyen et al. (2015) as one the important reasons SMEs adopt IT. Mobile technology, however, takes the transformation of processes, products or service portfolios and business models to a different level in comparison to fixed networks and stationary IT. As discussed in subsection 6.3.1., the difference lies in the distinctive nature of mobile technology, whereby mobility enables ubiquitous work but mostly importantly work on the go.

Additionally, Feeny and Willcocks' (1998) study emphasises leadership and managerial competences as key to exploiting IT resources. In particular, they highlight the strategic vision to align IT with organisational strategy and abilities, to manage relationships effectively within teams. Strategic vision is important in this study, too. But the strategic vision is this study is mostly related to the context of SMEs – the vision of the business owner to adopt IT (Elbeltagi et al. 2013). However, the results of this study indicate that when it comes to mobile technology deployment, leadership is not limited to the power of a single individual. As a result, small firms develop multiple intrapreneurial identities (Menzel et al. 2007) rather than restricting organisational leadership in entrepreneurial identity's (owner-manager's) hands (Macpherson et al. 2003; Jones et al. 2010; Elbeltagi et al. 2013). Flexible mobile working, enhanced communication processes and continuously developing MTI enable and simultaneously force individuals to lead projects as well as interchange roles and responsibilities. In fact, such an attitude to coordinating process of mobile technology deployment results in mobile technology skills being transferred across the firm.

Overall, Winter (2003) concludes that the application and reconfiguration of resources, to solve organisational and customer problems, is a substantive capability. The advantage of this substantive capability is mainly in the way it contributes to effective and efficient operational processes within an organisation (Jones et al. 2014a). Thus, it can be concluded that mobile technology capabilities with the ability to solve problems and leverage mobile technology resources are substantive in nature. Theoretically, based on the dynamic capability approach (Teece et al. 1997), both the transforming and the learning capabilities are dynamic in nature, because they help firms that are "*confronted with changing markets or changing technologies*" to "*respond to a changing business environment*" (Jones et al. 2014a, p. 144). The nature of mobile technology capabilities, therefore, could be studied further to confirm whether it is more dynamic or ordinary in essence.

To sum up the overall discussion around mobile technology capabilities, it is evident that an interaction between two elements, namely mobile technology resources and mobile technology capabilities in this instance, can deliver benefits and advantages for creative service SMEs. Depending on a firm's commitment to mobile technology deployment, mobile technology capabilities orchestrate mobile technology resources

and result in operational efficiencies (Cluster A), transformation of processes (Cluster B) and a substantial change in the business models (Cluster C). In addition, Chapter 5, subsection 5.6.2 and 5.6.3. show that this orchestration, achieved through a unique combination of distinct mobile technology resources, facilitates innovative practices in creative service SMEs.

6.3.3. Defining Service Innovation

In the academic literature, defining the service innovation concept remains a matter of dispute. As the literature review (Chapter 3) on this subject concludes, many diverse theoretical underpinnings to conceptualising and understanding innovation in services lead to distinct definitions starting with a broad theoretical perspective (Den Hertog et al. 2010; Paswan et al. 2009; Carborg et al. 2014) and ending with defining individual categories under the generic 'service innovation' concept (Edvardsson and Olsson 1996; Sundbo 1997; Toivonen and Tuominen 2009; Xinhui 2008; Kindström and Kowalkowski 2014).

From a broader perspective, service innovation is thought of as an interactive system that uniquely combines organisational resources, knowledge and governance mechanisms, in order to solve problems and realise a firm's strategic goals. However, the majority of authors (Edvardsson and Olson 1996; Edvardsson 1997; Miles 2001; De Jong and Vermeulen 2003; Metcalfe and Potts 2007; Toivonen and Tuominen 2009; Kindström and Kowalkowski 2014) define service innovation as a process starting with idea generation (service concept) and ending with the delivery of the idea to the market (delivery system). On the contrary, studies by Sundbo (1997) and Johnson et al. (2000) perceive service innovation as a renewed version of an existing service outcome or a completely new and radical service outcome delivered to a customer. Hence, the categorisation of service innovation into two groups – process innovation and product innovation – has already been proposed.

This study concludes that in a creative service SMEs deliverying marketing, advertising, digital desing and digital architecture services innovation in services has a unique, ad hoc and continuous nature, because, in meeting the research objective 3, service innovation implies continuously and creatively solving client's and firms' problems. Johne and Storey (1998) emphasise that the continuous nature of service innovation is

what differentiates innovation in services from innovation in a manufacturing context. Solving problems can firstly involve incremental and radical changes in the process of developing and delivering a service outcome – process service innovation practice. Secondly, solving problems can take the form of the actual outcome, solution that was not previously available to clients, and demonstrate incremental or radical changes to existing service outcomes offered by the firm – product service innovation practice. It is critical to stress that such a definition is particularly applicable to the creative service, marketing and advertising sectors. In their recent publications, Edvardsson et al. (2013) and Carborg et al. (2014) emphasise that service innovation should be studied and defined contextually. Therefore, it is a contextually defined and shaped phenomenon. The examples of SIPs (Chapter 5, subsections 5.6.2. and 5.6.3.) discussed in this study verify this claim.

In addition, and in line with existing work on SMEs which proves that adoption of IT drives the innovation (Higón 2012; Bharati and Chaudhury 2015; Nguyen et al. 2015) this study finds deployment of mobile technology facilitative and stimulates service innovation practices (SIPs). In fact, Prajogo and McDermott's (2014) study support this view by verifying that 'connectedness' is the antecedent to service innovation in SMEs. In Prajogo and McDermott's (2014) study the connectedness means relationships and opportunities to freely communicate within the firm. This study reveals that mobile technology deployment enables the connectedness and in line with Prajogo and McDermott's (2014) study drives service innovation,

6.3.4. Mobile Technology Capabilities and Service Innovation Practices: Connected or Not?

The vast amount of research explores the role that the deployment of fixed networks and stationary IT has in relation to changing firm performance (Bharadwaj 2000; Bhatt and Grover 2005; Rai et al. 2006; Ross et al. 1996; Sambamurthy et al. 2003), with few studies conceptualising innovation as a performance factor (Bygstad and Aanby 2010; Dibrell et al. 2008) and an even more limited number of studies exploring the relationship between fixed networks and stationary IT use and service innovation (Chen and Tsou 2007; 2012; Prajogo and McDermott 2014). To the author's knowledge, no published studies have explored the role of mobile technology capabilities in service innovation. This study, therefore, bridges this gap.

In a number of publications, Chen and Tsou (2007; 2012) discover that deploying fixed networks and stationary IT, particularly in the form of IT resources (comprising IT infrastructure, knowledge, relationships and business experience), positively affects SIPs. The results of this thesis correspond with the IT literature and conclude that mobile technology deployment stimulates and facilitates service innovation by changing processes (SIPPc) used in delivering and developing services as well as being part of new service outcomes (SIPPd).

In fact, an interpretation of the relationship between individual mobile technology capabilities and SIPs corresponds with the service innovation notion provided by Edvardsson and Tronvoll (2013, p. 27):

> *"Changes in structure that stem from either a new configuration of resources or a new set of schemas and that result in new practices that are valuable for the actors in a specific context."*

In the past, service innovation scholars have also suggested that combining relational assets (Agarwal and Selen 2009; Carbonell et al. 2009; Melton and Hartline 2010) by reconfiguring tangible and intangible resources (Edvardsson 1997; Tax and Stuart 1997) results in service innovation. Edvardsson and Tronvoll's (2013) study extends this view by adding, modifying and combining resources, while ways to leverage and deploy these resources (schemas) transform processes and service outcomes. More importantly, Edvardsson and Tronvoll (2013, p. 27) state that "*Changes in interdependencies between resources and schemas in a focal service system are the source of service innovation.*"

The most interesting insights, however, are represented by interviewees' accounts describing the role of individual mobile technology capabilities in SIPs. Transforming capability as part of mobile technology capabilities facilitates changes in operational processes (SIPPc) through the reconfiguration of mobile technology resources (MTI – introducing mobile-based project management software; mobile technology skills – new service development process; organisational culture – operational flexibility).

As a matter of fact, the last element, organisational culture through transforming capability, contributes to establishing operational flexibility, in the form of adjustment

agility. Adjustment agility cannot occur when deploying fixed networks and stationary desktop IT, because the rigidity of this form of IT stops firms from achieving the same degree of operational mobility enhanced interactive competences and physically respond to demand changes as mobile technology allows due to its distinctive nature and technical features (Allen and Boynton 1991; Overby et al. 2006; Weill et al. 2002). This is particularly evident in Cluster C firms that mobilise their operational processes by introducing mobile project management software and as a result enable fully mobile work patterns among employees.

Furthermore, in relation to product innovation, this study found that mobile technology capabilities play a positive role in SIPPd in firms that invest heavily in purchasing new mobile technology and establishing strong MTI (acquiring and accumulating MTI as part of leveraging mobile technology resources). This result corresponds with the IT literature (Bhatt and Grover 2005; Krishnan and Sriram 2000). More specifically, considering a firm's strategic attitude/commitment to investing in IT, Lu and Ramamurthy (2011) found that higher IT spending leads to superior performance and IT capability. This study is consistent with these findings, as higher MTI spending eventually results in more radical and innovative outcomes and changes within the process (Cluster C in comparison to Clusters A and B). Bear in mind, however, that these relationships are consistent on both the strategic and operational levels, whereas only the strategic level has been touched upon in IT capabilities-related studies (Lu and Ramamurthy 2011). As such, Cluster C firms, for instance, as a result of substantial investments in building in-house MTI, have radically changed their processes by 'mobilising' the management of operations, communicating with clients, service delivery and development systems. In addition, heavy investments in MTI have led to the development of radically new service outcomes (mobile applications, mobile games and mobile software programs).

Chen and Tsou (2012) found that IT capabilities particularly stimulate SIPPc. These results are evident in this study on mobile technology deployment, where all three clusters are engaged in SIPPc as a result of deploying mobile technology. However, Cluster A does not produce any SIPPd. This finding links back to leveraging mobile technology resources, where the acquisition and accumulation of mobile technology resources are the only ways to produce SIPPd. Cluster A firms leverage mobile

technology resources, but only by outsourcing them to external partners or engaging in bootstrapping practices.

It is evident that the impact of leveraging mobile technology resources and transforming capabilities on SIPs depends particularly on the degree of organisational commitment a service firm devotes to mobile technology deployment. This commitment is essentially strategic in its nature. The organisational commitment to mobile technology deployment also determines with what innovation practices a firm is going to engage. Chen and Tsou (2007) also discovered that in the financial sector, strategic leaning towards deploying IT underpins the role of IT in stimulating SIPs.

In meeting the research objective 4, the author has reflected on the research findings of this in relation to existing scholarly work and the following main finding can be reinforced:

> *Depending on organizational commitment of creative service SMEs to mobile technology deployment, interaction between mobile technology resources and mobile technology capabilities can lead to both service innovation practices, in particular process service innovation practices only (Cluster A) and both process service innovation practices and products service innovation practices (Clusters B and C).*

6.5. Chapter Summary

This chapter has discussed and illustrated the substantive theory grounded in this study. This theory explains the role of mobile technology capabilities in service innovation practices of creative SMEs. The theory suggests that the interaction between mobile technology resources and mobile technology capabilities stimulate and facilitate process and product service innovation practices. A critical reflection on existing research findings has demonstrated overlaps and differences in the results. Results on mobile technology deployment overlap with research on fixed networks and stationary IT. However, no previous studies have explored how mechanisms of combining resources with capabilities affect SIPs. This study provides such insights, by specifically investigating the interaction between mobile technology resources and mobile

technology capabilities and by reflection on practises across creative services SMEs. In particular distinct clusters have been identifies which demonstrate that depending on organizational commitment of creative service SMEs to mobile technology deployment, interaction between mobile technology resources and mobile technology capabilities can lead to both service innovation practices, in particular process service innovation practices only (Cluster A) and both process service innovation practices and products service innovation practices (Clusters B and C).

Chapter 7. Conclusions

7.1. Overview of the Chapter

This chapter summarises the findings of this study, which are presented in line with all five objectives of this study, outlined in the first introduction chapter of this thesis. Prior to that, the researcher reflects on the research journey and the way this thesis unfolded. The contribution and originality of this study are critically discussed, followed by a review of limitations and then suggestions for future research. Implications for both academia and practice complete this chapter and this thesis.

7.2. Reflection on the Research Process

This study represents the interesting journey aimed at conceptualising qualitative results by grounding the substantive theory. The journey is interesting as it stands, with a flexible, challenging but ever so innovative research process, but also with aim of connecting empirical data and context that have not been related so far. Mobile technology is a fascinating field in IT evolution, changing not only the face of communication but also businesses operationally and strategically. Hence, the successful deployment of mobile technology depends on a variety of elements rather than only on pure functional or technical features of technology itself. This is what fascinated the author and drove her to study this phenomenon.

However, the author was always self-conscious about her interests. Hence, the choice of the contextual setting in which to explore theoretical gaps in the literature was an opportunity to fit the researcher's interests with contemporary research problems and gaps. Creativity has always characterised the researcher's personality, whether in completing art school or by eventually studying for a marketing degree. Hence, narrowing down the research to a creative industries setting was a way of fulfilling the researcher's desires for creativity. Research, on the other hand, primarily involves logic and the analytical ability to link information and 'read between the lines'. Analytical skills and logical thinking are also considered personal characteristics of the researcher. Selecting a creative industry setting was eventually justified rationally and through existing research, to demonstrate that creative firms are pioneers in using mobile technology, and therefore the chosen context represented a fruitful hub of experiences in deploying mobile technology, but most importantly innovating.

In addition, the research process was easily set up for data collection, because of the nature of creative firms. Most firms are small and medium enterprises and are quite open to discussing topics of even a confidential nature (innovation for instance). Hence, finding interviewees and also establishing a good rapport with them led to unbroken relationships whereby the interviewees attended events organised by the researcher and her institution, but they were also open to reflecting later on various aspects discussed during the interviews.

The research journey, which was efficient and smooth during the setting up and data collection stages, was challenging during the data analysis phase. Setting up research by choosing an appropriate research method was a difficult task. The original commitment to a quantitative approach was eventually neglected in favour of a qualitative approach. The justification for such a choice lies purely in the state of the existing research around mobile technology. The data analysis process was challenging, due to the complex nature of the chosen grounded theory research process as well as the lack of experience that the researcher had with qualitative methods. Nevertheless, even the choice of the research method, evolved grounded theory, reflected the expertise and experiences of the researcher. Hence, the philosophical stance reflects this and the robust and systematic data analysis process proffered by Corbin and Strauss (1990) with flexible solutions from Glaser and Strauss (1967) perfectly fitted the researcher. Moreover, self-reflection evidence collected as part of the chosen research method, initial notes and memos helped the researcher to go through the cycle of critical analysis and the process of maintaining the validity and reliability of the data and the developed substantive theory.

7.3. Summary and Implications of the Findings

The main purpose or aim of this study is in developing a substantive theory (research objective 4). This study has developed a substantive Mobile Technology Capabilities - Service Innovation Practices Relationships theory. As it stands, this theory explains the relationship between mobile technology capabilities and service innovation practices in a specific contextual setting – the creative service SMEs.

The theory suggests that the interaction between mobile technology resources and mobile technology capabilities stimulate and facilitate process and product service

innovation practices (Research Objective 4). A critical reflection on existing research findings has demonstrated overlaps and differences in the results. Results on mobile technology deployment overlap with research on fixed networks and stationary IT. However, no previous studies have explored how mechanisms of combining resources with capabilities affect SIPs. This study provides such insights, by specifically investigating the interaction between mobile technology resources and mobile technology capabilities and by reflection on practises across creative services SMEs.

In meeting the Research Objective 1, the findings from this study suggest that mobile technology deployment is grounded in establishing an interactive system of mobile technology resources, where infrastructure, skills, relationships and culture interact to enable operational efficiencies and/or create new solutions. In particular distinct clusters (Research Objective 1 and Research Objective 4) have been identifies which demonstrate that depending on organizational commitment of creative service SMEs to mobile technology deployment, interaction between mobile technology resources and mobile technology capabilities can lead to both service innovation practices, in particular process service innovation practices only (Cluster A) and both process service innovation practices and products service innovation practices (Clusters B and C).

Moreover, in meeting the Research Objective 2, the author concludes that mobile technology capabilities are found to form a set of the following capabilities that enable firms to creatively and distinctively combine and deploy mobile technology resources: (1) leveraging mobile technology resources capability; (2) transforming business operationally and strategically capability; (3) learning capability; (4) solving problems capability and (5) leading capability. This is a unique set of capabilities identified in the studies firms; however, all capabilities or sub-capabilities are consistently presented across three clusters of creative service SMEs which have distinct organisational commitments towards mobile technology deployment.

In meeting the Research Objective 3, results of this study concludes that business practitioners, working in the creative service SMEs deliverying marketing, advertising, digital desing and digital architecture services, agree that innovation in services has a unique, ad hoc and continuous nature, because, service innovation implies continuously and creatively solving client's and firms' problems.

Finally, the overall concluding statement which attempts to integrate all research objectives and, therefore, achieve the research aim is the following:

> *Depending on organizational commitment of creative service SMEs to mobile technology deployment, interaction between mobile technology resources and mobile technology capabilities can lead to both service innovation practices, in particular process service innovation practices only (Cluster A) and both process service innovation practices and products service innovation practices (Clusters B and C).*

In terms of main implications presents a substantive in nature propositions which should be tested further to seek generalization and formalization of the theory. From managerial point of view, SMEs can use the results of the cluster analysis for a self-assessment of current mobile technology deployment practices, but most importantly for strategic and operational planning. Mobile technology resources and mobile technology capabilities can be tracked and determined using sub-categories and dimensions identified within each of these core categories. Firms that are clustered as A, depending on their organisational commitment to mobile technology, can potentially decide to introduce new practices or new mobile technology capabilities and change their policy towards mobile technology resources. Such decisions will enable firms to move from Cluster A to Clusters B or C, which deploy mobile technology to achieve strategic in nature outcomes, i.e. innovation practices.

7.4. Evaluation of the Substantive Theory

In this section, the author refers back to the theory quality criteria discussed in Chapter 4, subsection 4.4.4.2. and evaluated the substantive theory developed in this thesis against each criterion.

- Density or plausibility – the Mobile Technology Capabilities - Service Innovation Practices Relationships theory is constrained by contextual setting and the sample (data) from which the theory emerged. However, frequency analysis was conducted consistently for all categories derived in the axial coding stage. The frequency analysis enabled identification of consistent representation

of each category across the sample. Hence this substantive theory meet the criteria of density and plausibility;

- Scope of the theory – the scope of the Mobile Technology Capabilities - Service Innovation Practices Relationships theory is clearly defined by unit od analysis and unit of collection (see Chapter 4, subsection 4.5.1.1.). However, the results present abstract research objects, relationships and interactions between these can be studied and verified in the different or similar context;
- Workability - the Mobile Technology Capabilities - Service Innovation Practices Relationships theory can be considered workable dues to the transparency of the data analysis process;
- Fit – the discussion against existing literature proves that the substantive theory developed in this study is consistent with results within the information systems domain as well as within the studies focusing on SMEs. Hence the substantive theory of this study meets the criterion of 'fit';
- Contextualisation of the theory and its elements – the substantive theory developed in this study fully represent the context, within which the empirical sits.
- Variation – divergent cases were included in the discussion of axial categories; however, the representation of data is limited;
- Reproducibility – the final theory explaining the relationships between mobile technology capabilities and service innovation practices is fully based on empirical data collected and analysed by the author.

7.5. Contribution and Originality

In the author's view, this study meets all the requirements of the doctoral degree in the forms of 'original' work, maintaining professional practice and advancing independent and critical approaches to the thinking process (Silverman 2000). According to Silverman (2000), originality is a subjective issue which counts for a variety of elements specific to every single study. Independence of thought and professional research practice are key concepts whereby building research on the basis of existing studies is not a matter of imitation as long as new insights have been gained. This study originates from a critical evaluation of existing research on capabilities, information systems and service innovation practices and an overview of mobile technology. Gaps

identified in the literature are fully addressed in this thesis. The choice of methodological path has been critically evaluated and applied in accordance with the current state of research on service innovation, mobile technology and creative sectors. The grounded theory method that primarily underlines this study methodologically implies developing new theoretical insights and a conceptualisation of the phenomenon. An evaluation of the empirical results and theoretical frameworks against existing knowledge clearly indicates (Chapter 6) that this study provides new insights that contribute both to theory and practice. The next two subsections direct us to an overview of these contributions.

7.5.1. Contribution to theory

Primarily, this study's main theoretical contribution is in introducing and defining a new concept named 'mobile technology capabilities' – a firm's unique practices in orchestrating mobile technology resources to create competitive advantage. To date, no study found amongst published research has introduced the concept of mobile technology capabilities. Therefore, the concept and its empirical definition are presented by this thesis for the first time. Essentially, the researcher contributes by developing new knowledge or new information.

In addition, the conceptualisation of mobile technology capabilities covers a detailed identification of dimensions with a set of sub-capabilities. These sub-capabilities can be practiced in isolation or in combination. In comparison to existing concepts of IT capabilities that simply represent a bundle of IT resources, the mobile technology concept, in line with the theoretical base of the capability approach, imply the orchestration of mobile technology resources. Hence, mobile technology resources complement capabilities rather than act as part of such capabilities. Thus, a firm can possess resources, but only capabilities result in operational or strategic improvements. It can be argued that, essentially, no new knowledge is produced. However, no studies have used the capability approach to study mobile technology deployment. Hence, this is in fact a new topic to be addressed through capability theory.

This thesis acknowledges the academic debate around the definition of the service innovation term. In so doing, this study defines service innovation from a practitioner's perspective. Clearly, service innovation is a new and ambiguous term, where innovation

has been considered traditionally as a tangible artefact. Nevertheless, practitioner define service innovation through a theoretical definition proposed by a synthesis stream of service innovation research which considers service innovation as a unique bundle of resources and capabilities resulting in new operational changes or transformed and radical solutions to client problems. At this point, the author does not attribute this study to a particular stream of service innovation studies. Despite the fact that practitioners' perception of service innovation direct the results of this research to the synthesis stream, the core of the study lies in explaining the role of the technological element (assimilation stream) in service innovation.

Lastly, this is the first study to integrate conceptually service innovation and mobile technology deployment by grounding this conceptualisation in empirical setting, which is creative service SMEs delivering advertising, marketing, digital design and digital architecture services. As such, the author contributes a new topic, new information, and a new contextual setting to enrich the existing body of knowledge on mobile technology, capabilities, service innovation and SMEs.

7.5.2. Contribution to practice

In practice, understanding the mobile technology deployment process is particularly significant for SMEs' business owners and managers who should not ignore the ubiquitous business opportunities deriving from new technological advancements, i.e. mobile technology. In particular, this study reinforces the distinctive nature of mobile technology so that managers can see the real value in embracing mobile technology.

Moreover, mobile technology deployment represents interaction between mobile technology resources and mobile technology capabilities. Each of these categories is multidimensional. As a result, managers can map their mobile technology resources by understanding what MTI their firms have, as well as skills, relationships and organisational culture. Recognising the composition of mobile technology resources in their firms will enable managers to reconsider their strategic and operational commitments towards mobile technology deployment and make relevant changes to the structure of such resources. Mobile technology capabilities also represent a set of practices which can be employed to orchestrate successfully mobile technology

resources. Once again, an analysis of current practices in firms will help managers to realise the potential for further improvements.

The discussion above is even more relevant and valuable to practice, considering the clustering of firms based on organisational commitment they have towards mobile technology deployment, depending on which firms utilise mobile technology as a purely operational tool, produce new solutions or even transform an entire business model. It is vital for managers to self-assess their mobile technology resources and capabilities and then plan strategic changes, if relevant, to remain competitive.

The empirical results suggest that firms, particularly from the creative service industry, feel pressured to keep up with technological trends. The analytical results demonstrate that, irrespective of the business model or strategy, or even size (from micro to medium range), firms can engage with mobile technology. Different clusters demonstrate various ways to engage with mobile technology.

Additionally, this study signals to managers that mobile technology deployment leads directly to SIPPc and SIPPd. Once again, managers can make the decision as to whether they are only to effectively manage operations in firms through mobile technology deployment or whether they are to perceive mobile technology deployment more strategically and as a result produce new solutions.

7.6. Limitations and Directions for Further Research

This study has developed two theoretical frameworks that (1) map the distinctive nature of mobile technology and (2) illustrate the mobile technology deployment process through interaction between mobile technology resources and mobile technology capabilities, thereby indicating that such interaction stimulates and facilitates SIPs. These results are specific to the creative service SMEs delivering marketing and advertising, digital design and digital architecture services.

The geographical limitation of this study as a representation of the UK only presents possibilities to conduct a cross-cultural study by extending it to other countries with more or less advanced technological infrastructure. Hence, the contextual constraints of this study represent an opportunity for further studies.

Moreover, numerous overlaps with information systems research suggest the applicability of IT measures to operationalise constructs from the substantive theory. Alternatively, new measures or items can be developed using the traditional Churchill's (Churchill 1979) method for developing marketing constructs.

The data in this study were largely cross-sectional, thereby presenting a snapshot of an individual's opinion at the time. The adoption of different qualitative methods to either conduct a longitudinal study via the grounded theory method, with the aim of developing a process model, or cover a longer span of time via ethnography would help to build even more detailed information on mobile technology deployment and its role in SIPs.

In addition, this study looked at a number of perspectives by interviewing 31 practitioners. Focusing on a few cases by applying a case study method would likely generate more detailed insights. Moreover, the three clusters emerging from this study could be validated through a few cases (inductive case study research method) or through a large number of cases (deductive survey method to identify shared within clusters characteristics). Moreover, differences across SMEs need to be explored further.

Numerous opportunities for further studies are provided by individual results in this research. Relationships as part of mobile technology resources are critical to service innovation practices and drive the strategic direction of the firm deploying mobile technology. As such, firms relying on outsourcing minimise the intensity of mobile technology deployment processes in their firms. On the contrary, internal relationships within the firm are critical to firms willing to build an in-house mobile technology base and innovation capacity, in order to create new approaches and solutions. This needs to be addressed further from a partner's point of view. Perhaps adopting a network approach to map relationships and determine what mobile technology resources are shared across a firm could enhance a detailed understanding of external relationships as a route to accessing mobile technology resources.

Other individual components of mobile technology resources, such as organisational culture or skills, could contribute to extending knowledge within the organisational studies domain. Interaction between individual elements of mobile technology resources

and individual capabilities representing mobile technology capabilities need to be explored further. Both suggestions are best to be addressed through qualitative research methods and preferably through a longitudinal research setting. Overall, however, it is clear that this study is fundamental, as it is the first to develop a concept of mobile technology capabilities and explore in detail the relationship between mobile technology capabilities and innovation practices in creative service SMEs. Hence, a new concept can be integrated in different qualitative and quantitative studies that address mobile technology deployment in the organisational context.

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Appendices

Appendix A: Studies on Service Innovation

(Please see the next page)

Author(s)	Research Focus	Industry	Type of Study	Main Conclusions
Stream I: Assimilation Approach				
Pavitt (1984), Pavitt et al. (1989)	Codification of innovation activities across firms and sectors.	(1) Agriculture, housing, private services, traditional manufacture; (2) assembly manufacture, bulk materials; (3) machinery, instruments; (4) electronics, chemicals; (5) finance, retailing, publishing .	Sector level SPRU Innovation survey Quantitative and qualitative analysis	Development of the industrial taxonomy of the innovation based on technological trajectories: (1) supplier-dominated, (2) scale intensive, (3) specialized suppliers, (4) science-based, (5) information intensive (a new pattern for the some service activities, such as finance, retailing and publishing).
Barras (1986)	IT-based innovations in services. The analysis of the transmission trajectory by which the adoption of the new technology is characterized within the user industries.	User industries within the service and consumer goods industries.	Conceptual	The innovation process trajectory through the "*Reverse product cycle*" (RPC): improvements in the efficiency of delivering existing services lead to quality improvements, eventually yielding to product innovations through the generation of new types of services.
Easingwood (1986)	Investigation of the new product development (NPD) practices in service organisations and exploration of the service differences reflection on new service development management.	Financial (insurance and banking); hospitality (hotels, motels, catering, and tour operators); communications; transportation; retailing.	Qualitative and quantitative analysis	Service characteristics have implications for NPD (most crucial aspects are simultaneity and intangibility). A service is a "*inextricably part of a network structure*"; therefore, test market is playing unimportant role within new service development (NSD) (p. 274). Work load capacity of operations can be reduced through the use of technologies.
Soete and Miozzo (1989, 2001)	Revision of the Pavitt's taxonomy and design of the alternative taxonomy of services that captures a close interaction nature between services and manufacturers.	(1) Personal services (restaurants, laundry, beauty); public and social (health, education); (2) transportation, wholesale, finance/insurance, communication; (3) specialist business services, software.	Qualitative induction/deduction	Service taxonomy based on technological linkages with manufacturing firms has been built in order to address the changing nature within the service sector: a technological transformation and an intensified internationalisation: (1) supplier dominated; (2) scale-intensive physical networks and information networks; (3) specialised suppliers and science-based.

Scheuing and Johnson (1989)	Development of the systematic model of NSD	-	Conceptual	The marketing function (marketing research) of the organisations is, primarily, responsible for the NSD; project-teams are the manageable unit within NSD, where formal development process is less likely to evolve; competitors (external source) are the most powerful source of innovative ideas in services; NPD process has to be adapted to the IHIP characteristics of services. Proposition of the new service strategy matrix with four available options: share building, market extension, line extension, and new business.
Edgett (1994), **Edgett and Snow (1996)**	Evaluation of the NSD activities for the determination of factors, which lead to the successful performance. Examination of three categories of success antecedents in NSD: customer satisfaction (customer retention rate), product quality, product performance.	Financial services (banks and building societies). Financial services (insurance companies, banks, trusts and credit unions).	Survey	NSD is a manageable process where NPD principles (NSD as a systematic process of activities) are applicable to the measurement of intangible products success. Significance of the "*softer*" measures: employees and customers satisfaction (relationship marketing) and performance assessment (service quality) within NSD outcomes analysis. Effective measurement of success is a crucial aspect of the NSD.
Sundbo (1994,1997)	Exploration of the organisation aspect of the innovation process in the service sector.	Financial service (banks and insurance, payment-transmission companies, investment advisory services); management consultancy; tourism services; catering.	Multiple case study	The organisation of the innovation in services can be understood through similar approaches that have taken for the manufacturing: flexible specialization and modulisation that will allow to service firms to adopt the standardisation practices within the NSD. But in services, the customer is core element according to which all changes occur. Innovation and organisational learning are two separate theoretical doctrines. Strategic

				innovation theory is the most appropriate for the defining nature of innovation in the service sector. However, the entrepreneur and the technology-economic innovation theories have to be also taking into account. Four types of service innovation organisations have been identified: (1) top strategic organisations; (2) network firms; (3) professional firms; (4) classic entrepreneurship.
Johne and Storey (1998)	A review of all recent studies (up to 1998) on NSD issues.	The largest proportion of the reviewed research analysed service innovations in financial sectors.	Critical analysis and "*annotated bibliography.*"	NSD process bases on NPD models. NSD management is a management practice of key activities in a process chain, where cooperation is a key issue in the human element of the service innovation. The definition of the NSD is proposed, and emphasis is on the operational and strategic fit within NSD process.
Evangelista (2000)	Evaluate major similarities/differences of service innovations with innovations in manufacturing. Determine patterns of service innovations. Give a brief overview of firms' innovation strategies and performance in service sector.	(1) Transportation, security, cleaning, travel services, retail, and legal services; (2) advertising, finance (banks and insurance), hotels and restaurants; (3) Computer and software services, R&D services; (4) integration of R&D and design services.	Sector level Italian Innovation Survey (ISTAT, 1997) (based on OECD "*Oslo Manual*") Factor analysis and clustering	Following taxonomy has been proposed: (1) technology users; (2) interactive and IT based services; (3) science and technology-based services; (4) technical consultancy services. Services and manufacturing sectors have more similarities in the process and patterns of innovating.
Avlonitis et al. (2001)	Investigate whether there is an innovativeness typology, specifically, for financial firms.	Financial services.	Qualitative interviews and quantitative (survey)	Typology of service innovations has been proposed and empirically validated: (1) new to the market services; (2) new to the company services; (3) new delivery processes; (4) service modifications; (5) service line extensions. Moreover, the study extends the analysis of each type within different stages of NSD process

				(related to each service innovation type individually) and performance outcome – proposes a blueprint for successful NSD. In financial sector, there is a inverted U-shaped relationships in regards to the degree of service innovativeness.
Stream II: Demarcation Perspective				
Gadrey et al. (1995)	Exploration on variety of innovation forms that occur within the service sector by applying "*economies of innovation*" theory of Schumpeter: the recombination model.	Consultancy, insurance, electronic information services.	Qualitative	Terms R&D (research and development) and innovation have a particular meaning within the service industries, where interaction model of innovation (based on the significance of the client-firm interface) and NSD (in project-oriented flexible environment) are dynamic and adaptive features of the system that is ready to provide ad hoc solutions.
Gadrey and Gallouj (1998)	Analysis of the relationships between provider and customers in professional and business services context.	Business and professional services (consultancy firms).	Conceptual	The 'moment of truth' and 'moment of thrust' are two interrelated stages within the analysis of the customer-service firm interaction that is essential in innovation development process.
Sundbo and Gallouj (1998, 2000)	Assessment of the innovation processes in service sector.	(1) Telecommunication; large-scale processing, building maintenance; software companies; 2) consultancy and engineering; (3) business consultancy services; (4) IT, repairing services; (5) cleaning, security, hotels and restaurants; (6) financial and tourism services.	SI4S (Innovation in services and services in innovation) Survey	The following classification of the service innovation patterns have been developed that counts particular innovations within service firms: (1) classic R&D (or technological) pattern; (2) service professional pattern; (3) organised strategic innovation; (4) entrepreneurial patterns; (5) artisanal innovation; (6) network pattern of the service innovation.
Den Hertog (2000)	Construction of the service innovation framework;	-	Conceptual	The four-dimensional model of service innovation has been proposed: technological

	mapping the NSD patterns; evaluation of the role played by KIBS in the service innovation system.			options and three, most significant non-technological factors (new service concept, client interface, and service delivery system. The service system is a result of the interactive relationships between the various dimensions. Moreover, five innovation patterns have been determined: (1) supplier-dominated innovations; (2) innovation in services; (3) client-led innovation; (4) innovation through service; and (5) paradigmatic innovations. Finally, service innovation in KIBS has been analysed through the prism of the knowledge creation model.
Dejellal and Gallouj (2001)	Attempt to conduct a survey that takes into consideration non-technological innovations (service innovations).	Financial services; consultancy; operational services; hotel, catering, and retailing.	SI4S (Innovation in services and services in innovation) Survey	Three hypotheses have been confirmed: (1) the interaction process between client and service company plays a crucial role in the service innovation process; (2) interactive models of innovation process are predominant in the service sector in comparison with the linear models of the NPD; (3) there is an increased demand in protection solutions for the service innovations.
Hipp and Grupp (2005)	Examination of the knowledge-intensive economy for the roles of human capital and innovation in the aim to stay sustainably competitive; the development of the service innovation typology that counts service specific attributes.	Wholesale and retail trade; transport; financial (banking/insurance companies); EDP/telecommunication; technical services; other business service (consulting) and other knowledge-intensive business services (KIBS).	CIS (Community Innovation Survey), Germany. Database (Verein für Kreditreform, VVC).	Typology that captures the innovation behaviour in service firms has been proposed: (1) knowledge-intensive services; (2) network-based services; (3) scale-intensive services; (4) supplier-dominated services. External environment is a very important factor within KIBS who are crucial knowledge providers for the majority of economic actors across the whole economy.

Sundbo et al. (2007)	Exploration of the innovative behaviour and innovation system in tourism industry: identification and evaluation of the innovativeness' determinants.	Tourism services (accommodation, travel agencies, transportation, restaurants and others).	Quantitative and qualitative	Tourism firms' innovativeness depends upon the size of the company – the larger the firm, the more innovative behaviour it pursues. Entrepreneurship has a specific value in tourism sector in boosting the innovation. It is particularly positively correlated with networking. The value of network has been recognised prior to the success of the service innovation in the tourism sector, overall. Determinant of the innovativeness are interrelated: "*larger size or entrepreneurship, professionalism of varying types, networks and favourable innovation systems*" (pp. 103-104).
Stream III: Synthesis				
Shostack (1982, 1984)	An attempt to integrate service and product design within one framework that allows a successful development of offerings – blueprinting and modelling mechanisms.	-	Conceptual	Modelling and blueprinting are essential instruments which allow experimentation, prototype concept testing and modifications prior to the commercialisation of new services. It eliminates inefficiencies or randomness of the NSD management process.
De Brentani (1989)	Identification of the factors which lead to the failure and/or success of firms operating in industrial services sector.	Financial (banking and trust, insurance); management services (computer and system, marketing and advertising, management consultant, accounting); transportation and communication (shipping and transportation, communication); and other sectors.	Quantitative Comparative study	NPD literature is an initial source for the measurement in NSD. Success factors that are shared with NPD are market orientation, a formality of the service development process, importance of radical degree of innovativeness within new service offering, and project synergy. However, it is crucial to take into consideration service-specific attributes: importance of customer judgment of service quality and other

				characteristics which might lead to competitive advantage via differentiation or cost reduction strategies.
Gallouj and Weinstain (1997)	An attempt to establish new theoretical stream in service innovation (and general innovation) research through the re-conceptualisation of the product/service based on Lancaster's (1966) characteristic-based approach.	-	Conceptual	Lancasterian approach is found to be a sufficient theoretical foundation for the integrative innovation approach that can involve both, services and products. The following innovation modes have been proposed: radical innovation, improvement innovation, incremental innovation, ad hoc innovation, recombinative and formalisation innovations. Moreover, four innovation dimensions (service outcome characteristics, service provider competencies, service provider technology and client competencies) form innovation vectors.
Drejer (2004)	Investigation whether Schumpeter's innovation concept can be a platform that integrated the nature of service innovations and NPD in manufacturing within a single framework.	-	Conceptual	Synthesis approach for innovation studying has been underlined. Service-specific characteristics such as involvement of multiple actors, the codification of knowledge in the process of innovation replication, and the significance of the organisational innovation are also applied to the manufacturing.
Tether (2005)	Examination on differences and similarities between innovation process in services and manufacturing.	Construction; wholesale and retail trade; and other services; and manufacturing (manufacturing and production of raw materials).	Innabarometer 2002 Survey (EU)	Services do innovate, but not differently from manufacturing. The variety of innovation modes is applicable to both, service and manufacturing sectors.
Oke (2007)	Determine the types of innovation in service sector, UK. Examine the relationships between the degree of innovativeness, NSD & NPD-	Financial and insurance services.	Qualitative interviews and quantitative (survey)	Both, product and service innovations, are examined. Incremental type of innovation is the most predominant among UK service firms. Existing formalisation of the NSD is more associated with radical degree of innovativeness;

	related practices and the overall performance of the service firms.			therefore, there is a need to identify similar approaches for pursuing me-too innovations. Service innovations are found to be prevailing over the product innovations among service companies.
Flikkema et al. (2007)	Exploration of the service development process through the adoption of a neo-Schumpeterian perspective.	-	Conceptual	"*Many service firms do not excel the production of technologically advanced artefacts, but foremost in its creative use*" (p. 555). Taking into account the service characteristics plays a significant role in the formalised development projects and creative use of technology, and, more often, result in incremental improvements of the service offering portfolio.
Froehle and Roth (2007)	Development of the NSD process construct. The integration of the resource-oriented and process-oriented practices within one conceptual framework.	Expert judges represent the following industries: financial, healthcare, education, media/communications, food services, pharmaceuticals, and utility.	Conceptual Construct development	The construct for the NSD practice has been developed specifically for the service sector. The applicability for the manufacturing should be empirically validated in the further studies.
Paswan et al. (2009)	Development of the service innovation typology.	-	Conceptual (purely based on the convergence analysis of the critical review of academic research and real benchmark examples).	A multidimensional blueprint, which determines the service innovation strategy and help to service firms to identify the typology (an eight-cell typology).
Ordanini and Maglio (2009)	Analysis of the decision modes within NSD process: (1) customers and market orientation; (2) internal process organisation; (3) external network. The	Hospitality services (hotels).	Qualitative Comparative analysis	Proactive market orientation (PMO) is the only, but not sufficient condition for the NSD success. Successful NSD can be achieved through two decisional options: (1) PMO and the formal top-down innovative process, with no reactive market orientation (RMO); (2) PMO, RMO and

	identification of the combination alternatives which are likely to result in successful service innovation.			open innovation strategy
Song et al. (2009)	Development a staged model, specifically, for NSD with the consideration of the service-related theoretical principles.	Professional, scientific and technical services; securities, commodity contracts, financial investments and related services; information services; hotels and casino hotels; administrative and support services.	Qualitative and quantitative	The staged management of the NSD process and the pre-launch stage training of employees based on dimensions of the SERQUAL (service quality) lead to the enhanced performance of the service innovation.

Appendix B: Theoretical and Conceptual Research Related to the Marketing Issues within Service Innovation Field

(Please see the next page)

Author(s)	Primary Focus	Marketing Concept (Perspective of Marketing)	Service Sector	Method	Summary Comments
De Brentani, U. (1989). Success and failure in new industrial services. ***Journal of Product innovation management,*** **6 (4), 239-258.**	Identification of the factors which lead to the failure and/or success of firms operating in industrial services sector.	Integration of product variables (NPD) and service-related variables (specifically within performance construct, IHIP)	Financial (banking and trust, insurance), management services (computer and system, marketing and advertising, management consultant, accounting), transportation and communication (shipping and transportation, communication), and other sectors.	Comparative surve	NPD literature is an initial source for the measurement in NSD. Success factors that are shared with NPD are market orientation, a formality of the service development process, importance of radical degree of innovativeness within new service offering, and project synergy. However, it is crucial to take into consideration service-specific attributes: importance of customer judgment of service quality and other characteristics which might lead to competitive advantage via differentiation or cost reduction strategies.
Scheuing, E.E. and Johnson, E. M. (1989). A proposed model for new service development. ***Journal of Services Marketing,*** **3 (2), 25-34.**	Development of the systematic model of NSD.	NPD normative and sequential models and examination of unique nature of services.	-	Conceptual	The marketing function (marketing research) of the organisations is, primarily, responsible for the NSD; project-teams are the manageable unit within NSD, where formal development process is less likely to evolve; competitors (external source) are the most powerful source of innovative ideas in services; NPD process has to be adapted to the IHIP characteristics of

					services. Proposition of the new service strategy matrix with four available options: share building, market extension, line extension, and new business.
Bharadwaj, S.G., Varadarajan, P.R., and Fahy, J. (1993). Sustainable competitive advantage in service industries: a conceptual model and research propositions. *Journal of Marketing*, 57 (5), 83-99.	Assessment of organisational skills and resources which lead to the sustainability of competitive advantage within service sector, and moderating effect of service industries' and firms' characteristics, and distinctive features of services.	Sustainable competitive advantage perspective, RBV (VRIN resources and capabilities).	-	Conceptual	Innovation is conceptualised to be a potential source of competitive advantage in the services, which is discerned as skill-based driver of the competitiveness.
Edgett, S. (1994). The traits of successful new service development. *Journal of Services Marketing*, 8 (3), 40-49.	Evaluation of the NSD activities for the determination of factors, which lead to the successful performance.	Application of NPD principles (linear model): examination of the marketing and development activities within the process of intangible products' creation.	Financial services (banks and building societies), UK.	Survey	NSD is a manageable process where NPD principles (NSD as a systematic process of activities) are applicable to the measurement of intangible products success.
Edgett, S. And Snow, K. (1996). Benchmarking measures of customer satisfaction, quality and performance for new financial service	Examination of three categories of success antecedents in NSD: customer satisfaction (customer retention rate), product quality, product performance.	Adaptation of the NPD measures of product quality, product performance and customer satisfaction to the services context. Relationship marketing and service	Financial services (insurance companies, banks, trusts and credit unions), Canada.	Survey	Significance of the "*softer*" measures: employees and customers satisfaction (relationship marketing) and performance assessment (service quality) within NSD outcomes analysis. Effective measurement of success is a crucial aspect of the NSD.

products. *Journal of Services Marketing,* 10 (6), 6-17.		quality.			
Gatignon, H. and Xuereb, J.M. (1997). Strategic orientation of the firm and new product performance. *Journal of Marketing Research*, 34 (1), 77-90.	Investigation of the most appropriate for the NPD strategic orientation mode: competitor, customer or technological.	Strategic orientation, market orientation, innovation characteristics.	Multiple industries sample (contains consumer services firms).	Survey	Technological orientation is critical for the successful NPD; competitive orientation supports the cost leadership innovation and useful to market innovations; consumer- and technology-orientations are essential for the survival in uncertain environment. *This study, primarily, focuses on NPD; however, sample includes the consumer services industries that provide the possibility for the applicability of the results within NSD.*
Han, J.K., Kim, N., and Srivastava, R.K. (1998). Market orientation and organisational performance: Is innovation a missing link? *Journal of Marketing,* 62 (10), 30-45.	Evaluation of the relationship between market orientation and innovation in financial sector. Conceptualisation of the innovation construct as a two-component variable: technical and administrative, - assessment of the influence of each element on firm performance.	Market orientation	Financial services (banking sector), Midwestern state of the USA.	Survey	Market orientation is positively associated with innovativeness and firm performance in the financial sector. The customer orientation has a strongest contribution towards innovativeness and firm performance enhancement. However, the high uncertainty environment emphasis the role of other two components of the market orientation – competitor orientation and interfunctional coordination. In the technologically turbulent condition, all elements of the market orientation play significant role in facilitating the innovation.
Johne, A., and Storey, C. (1998). New service development: a	A review of all recent studies (up to 1998) on NSD issues.	Strategic focus on NSD; NSD process (molecular modelling and blueprinting,	The largest proportion of the reviewed research analysed service	Critical analysis and "annotated bibliography.	The significance of the service market concept within NSD based on market orientation; the NSD management as a chain of key activities, where cooperation is a key issue in the human

review of the literature and annotated bibliography. ***European Journal of Marketing,*** **32 (3/4), 184-251.**		based on NPD models); relationship marketing.	innovations in financial sectors.	”	element of the service innovation. The proposition of the definition of the NSD. The emphasis on the operational and strategic fit within NSD process.
Voss, G.B. and Voss, Z.G. (2000). Strategic Orientation and firm performance in an artistic environment. ***Journal of Marketing,*** **64 (1), 67-83.**	Examination of the relationships between different strategic orientation dimensions (customer orientation, competitor orientation, and product orientation) on objective and subjective performance measures in the artistic environment.	Market orientation (customer, competitor), strategic orientation.	Nonprofit professional theatre industry, UK.	Survey	A customer orientation has a negative effect on sales, total profitability in the theatre industry. Innovation element is embedded within two constructs o the research model: the mediator/moderator - product characteristics (innovation-marketing fit and innovation-technology fit) and the dependent variable - performance (perceived and objective innovation performance indicators); however, these factors' effects have not been tested empirically within this study.
Alam, I. And Perry, C. (2002). A customer-oriented new service development process. ***Journal of Services Marketing,*** **16 (6), 515-534.**	Analysis of the customer input contribution within the stages of NSD process.	Customer orientation (customer-producer orientation)	Financial services, Australia.	Case study and elite interview	Proactive, long-term relationships with customers enhance the success of the NSD.
Matear, S., Osborne, P., Garrett, T., and Gray, B.J. (2002). How does market orientation contribute to service	Examination of the possible routes through which market orientation contributes to the performance of service organisations,	Market Orientation	Variety of service firms, New Zealand	Survey	Market orientation has been found to affect the performance directly and via innovation (mediating role of the innovation). MO is an important antecedent and strategic behaviour for the NSD. *Directions for further research:* the effect of

firm performance? *European Journal of Marketing*, 36 (9/10), 1058-1075.	where innovation is discerned as one of the constructs.				MO on various stages of innovation process within the service sector; identification of other determinant factors of the competitive advantage for the services and the interaction with MO construct
Agarwal, S., Erramilli, M.K., and Dev, C.S. (2003). Market orientation and performance in service firms: role of innovation. *Journal of Services Marketing*, 17 (1), 68-82.	Evaluation of the indirect linkage between market orientation and profitability of service companies.	Market Orientation	International hospitality sector (hotels), multi-countries study	Survey	"Service firms that are less market-oriented are less likely to consider innovation" (pp. 78-79). Innovation mediates both the relationships between MO and objective performance, and MO and judgemental performance. Moreover, innovation affects the objective performance of the service firms through judgemental performance (customer satisfaction, employee satisfaction, and service quality). *Directions for further research:* evaluation of the consumer-reported MO.
Caniëls, M.C.J. and Romijn, H.A. (2005). What works, and why, in business services provision for SME: insights from evolutionary theory. *Managing Service Quality*, 15 (6), 591-608.	Analysis of the processes and determinants of success in small and medium-sized service firms.	Customer orientation, services marketing (relationship marketing – user involvement and value co-production).	Small business support services, UK	Case study	The successful implementation of the customer-driven strategies requires "*long-term ongoing processes of user-producer interaction*" (p. 603). Moreover, the interaction interface has to be extended within wider categories of stakeholders in order to minimise the risk of path dependency. MO (specifically, customer orientation) has been proved to be an essential element of the strategic orientation of the service firms.
Stevens, E. (2005). Managing the new service development process: towards a systematic model. European Journal of	Examination of the role of the organisational learning within the service innovation process.	Organisational Learning	Financial sector (bank) and retailing, France.	Longitudinal case study	NSD process should contain an organisational learning component – proposition of the systematic learning model for NSD: dynamics within the model is made up of interactions, which are implemented by various interactors - human (individuals or groups) and technical

Marketing, 39 (1/2), 175-198.					devices, and the infrastructure.
Alam, I. (2006). Removing the fuzziness from the fuzzy front-end of service innovations through customer interactions. *Industrial Marketing Management*, 35 (4), 468-480.	Business-to-business (B2B) services and customer interaction in new product or service development.	NPD stage-gate model, customer orientation (market orientation), customer interaction (B2B relationship perspective, a network perspective).	Financial Services (Fortune 500), the Northeast of the USA.	In-depth field interviews	Customer interaction may help shorten development cycle time – support for the faster NSD.
Salunke, S., Weerawardena, J., and McColl-Kennedy, J.R., (2006). Conceptualising the service firm competitive strategy in hypercompetitive environments. *In: Australian and New Zealand Marketing Academy Conference (AZMAC) 2006*, 4-6 December 2006 Brisbane, Queensland, Services Marketing Track.	Examination whether the development of the dynamic learning capabilities by the service firms, which operate in the hypercompetitive environments, will foster a continuous innovation process and sustainability of the competitive advantage.	Competitive strategy, RBV, the dynamic capabilities view (DCV) and organisational learning perspective: market-focused learning, internally-focused learning, and relational learning.	-	Conceptual	The proposition that the superior dynamic learning capabilities (market-focused, internally-focused, and relational) lead to the successful NSD process that directly results in gaining a sustainable competitive advantage.
Chen, J. S., and Tsou, H. T., 2007.	Conceptualisation of the service innovation as an	Strategic marketing (competitive	Financial services, Taiwan	Survey	IT adoption has a positive impact on the service innovation practices that result in the

Information technology adoption for service innovation practices and competitive advantage: The case of financial firms. ***Information Research*****, 12 (3).**	organisational capability, which thought the impact of the IT adoption can lead to the competitive advantage of the service firms.	advantage).			gain of competitive advantage.
Chen L.J., Chen, C.C., and Lee, W.R. (2008). Strategic capabilities, innovation intensity, and performance of service firms. ***Journal of Service Science and Management,*** **1 (2), 111-122.**	Examination of the relationships between strategic capabilities, service firm's innovation and the performance.	Resource-based view (RBV), the social network theory (social capital perspective), organisational learning (innovation intensity, exploration and exploitation)	Variety of service firms (Top 5000-The largest corporations in Taiwan, 2006), Taiwan.	Survey	The social relationships (external resource of the service firm) facilitate the service innovation, which has a positive effect on the overall performance ("*interorganisational relationships are positively related to innovation intensity*," p. 118). External knowledge and cooperation are crucial sources and facilitative mechanisms of the NSD. But internal resources of service firms have no effect on innovation intensity. Strategic capabilities lead to the sustainability of the competitive advantage in services.
Chen, J.S., Tsou, H.T., and Huang, A.Y.H. (2009). Service delivery innovation: antecedents and impact of firm performance. ***Journal of Service Research*****, 12 (1), 36-55.**	Theoretical identification of the antecedents of service delivery innovation in service firms and empirical examination of the proposed hypotheses.	SDL Logic (operant resources), resource advantage theory with further focus through capabilities perspective.	Financial firms, Taiwan	Survey	Innovation orientation and information technology (IT) capability are key drivers of the service delivery innovation (SDI). SDI has a positive direct effect on financial and non-financial indicators of the service firms' performance. *Directions for further research:* examination of the relationships between interorganistional collaborations and SDI, examination of the effect of other operant resources (except IT capabilities, external partner collaboration, and

					innovation orientation) on SDI or other service innovations. Evaluation of the effect of different types of collaborative relations on the service innovation (which are specifically relevant to busting the innovation process in services).
Ordanini, A. And Maglio, P.P. (2009). Market orientation, internal process, and external network: a qualitative comparative analysis of key decisional alternatives in the new service development. *Decision Sciences*, 40 (3), 601-625.	Analysis of the decision modes within NSD process: (1) customers and market orientation; (2) internal process organisation; (3) external network. The identification of the combination alternatives which are likely to result in successful service innovation.	Market orientation (division on proactive MO (PMO) and reactive MO (RMO) components), SDL Logic (value co-creation, customer orientation), network perspective.	Hospitality services (hotels), Italy	Qualitative Comparative Analysis	PMO is the only, but not sufficient condition for the NSD success. Successful NSD can be achieved through two decisional options: (1) PMO and the formal top-down innovative process, with no RMO; (2) PMO, RMO and open innovation strategy
Paswan, A., D'Souza, D, and Zolfagharian, M.A. (2009). Toward a contextually anchored service innovation typology. *Decision Sciences*, 40 (3), 513-540.	Development of the service innovation typology.	Service-dominant logic of marketing, contextual dimensions: market orientation, environmental uncertainty, and strategic orientation (Porter's two strategic options – cost leadership and differentiation).	-	Conceptual (purely based on the convergence analysis of the critical review of academic research and real benchmark examples).	A multidimensional blueprint, which determines the service innovation strategy and help to service firms to identify the typology (an eight-cell typology).

Song, L.Z., Song, M., and Di Benedetto, C.A. (2009). A staged service innovation model. *Decision Sciences,* 40 (3), 571-599.	Development a staged model, specifically, for NSD with the consideration of the service-related theoretical principles.	Service quality, NPD stages model.	Professional, scientific and technical services; securities, commodity contracts, and financial investments and related services; information services; hotels and casino hotels; administrative and support services, USA.	Triangulation approach: in-depth case studies and survey.	The staged management of the NSD process and the pre-launch stage training of employees based on dimensions of the SERQUAL (service quality) lead to the enhanced performance of the service innovation.

Appendix C: Example of Research Notes

Interview №2: Summary - Note

Date: 13/12/10; Time: 5pm – 5.50pm

- The participant has launched a subsidiary of his main company in order to fulfil the opportunities gap which mobile technologies have revealed. Particularly, Bluetooth functionality of mobile technologies where the participant give for rent, leasing, initially selling, the coverage area for clients with Bluetooth-operating zone in order to bring into life all possibilities of maintaining relationships with customers in a specific time in specific location on a personal devices;
- The participant has a slightly pessimistic view on a value and impact of mobile technologies on a business;
- Mobile technologies are perceived to be not a revolutionary change in IT evolution but just a technological extension of all IT following up with stationary computing and development of wireless connectivity;
- Mobile technologies are just a technology and means of using it are the same, same rules, structures and routines are applicable;
- There is nothing what mobility has changed in a radical terms with just a provision of another channel, medium to conduct a business. What values is only revenue, and mobile technologies are another channel for making profit;
- It is a window of opportunities in a current time, but it might change and as a practitioner you just need to keep your eye on changes because mobile technology is not a change, there is something else might come in a future. As technology itself is not something unique, the capabilities needed to work with IT are well applicable and in practice are transformable in mobile business. The technology is same, it is just a context has changed with mobility feature but means of conducting a business are the same!

I felt that I did not receive answers to my questions today, feeling frustrated. Really negative feeling: “Is this worth studying?; Is there any value?”

Appendix D: Interview Data Count

Interviewee ID	Length of interview transcript	
	Word count	*Number of transcript pages (Times 12, 1.5 spaced)*
I1	9976	22
I2	6134	13
I3	5337	12
I4	5676	13
I5	1191	4
I6	7113	15
I7	7768	16
I8	5425	11
I9	8325	17
I10	6259	13
I11	8195	17
I12	5567	12
I13	9606	19
I14	8972	18
I15	11080	25
I16	2821	8
I17	8910	20
I18	7354	17
I19	5775	15
I20	5254	14
I21	7976	20
I22	8252	20
I23	5190	11
I24	9204	21
I25	4267	9
I26	5243	10
I27	7201	17
I28	5670	12
I29	3890	9
I30	3987	10
I31	3710	9

Appendix E: Consent Form

"Mobile Technology Capabilities and their Role in Service Innovation Practices in Creative Industries"

Name (please print clearly): _____

1. I have read the Letter of Information and have had any questions answered to my satisfaction.
2. I understand that I will be participating in the study called "*Mobile Technology Capabilities and their Role in Service Innovation Practices in Creative Industries*." I understand that this means that I will be asked to answer questions in interview session.
3. I am aware that I have the option of allowing my interview to be audio recorded to ensure an accurate recording of my responses. I am also aware that excerpts from the interview may be included in the thesis and/or publications to come from the research, with the understanding that quotations will be anonymous without revealing my identity.
4. I understand that my participation in this study is voluntary and I may withdraw at any time without any negative circumstances. I understand that every effort will be made to maintain the confidentiality of the data now and in the future. The data may also be published in professional journals or presented at scientific conferences, but any such presentations will be of general findings and will never breach individual confidentiality. Should you be interested, you are entitled to a copy of the findings.
5. I am aware that if I have any questions, concerns, or complaints, I may contact PhD Student, Elvira Bolat at ebolat@bournemouth.ac.uk; principal research supervisor, Dr. Julie Robson at jrobson@bournemouth.ac.uk; or research administrator in the Business School at Bournemouth University, Denise George at bsresearch@bournemouth.ac.uk.

I have read the above statements and freely consent to participate in this research:

Signature:_____ Date:_____

Appendix F: Letter of Information

"Mobile Technology Capabilities and their Role in Service Innovation Practices in Creative Industries"

This research is being conducted by Elvira Bolat under the supervision of Dr. Julie Robson and Dr. Lukman Aroean, in the Business School at Bournemouth University.

What is this study about? The purpose of this study is, firstly, to measure the unique competences and distinctive differences mobile technologies provide for creative firms in terms of value and benefits, and, secondly, to explore the role of mobile technologies competences in producing and delivering process and product innovations. This study will require a one hour interview session. There are no known physical, psychological, economic, or social risks associated with this study.

Is my participation voluntary? The participation is entirely voluntary. Although it be would be greatly appreciated if you would answer all questions as frankly as possible, you should not feel obliged to discuss any issues that makes you feel uncomfortable. You may also withdraw at any time without any negative circumstances.

What will happen to my responses? The researcher will keep your responses confidential and anonymous. The data may also be published in professional journals or presented at scientific conferences, but any such presentations will be of general findings and will never breach individual confidentiality. Should you be interested, you are entitled to a copy of the findings.

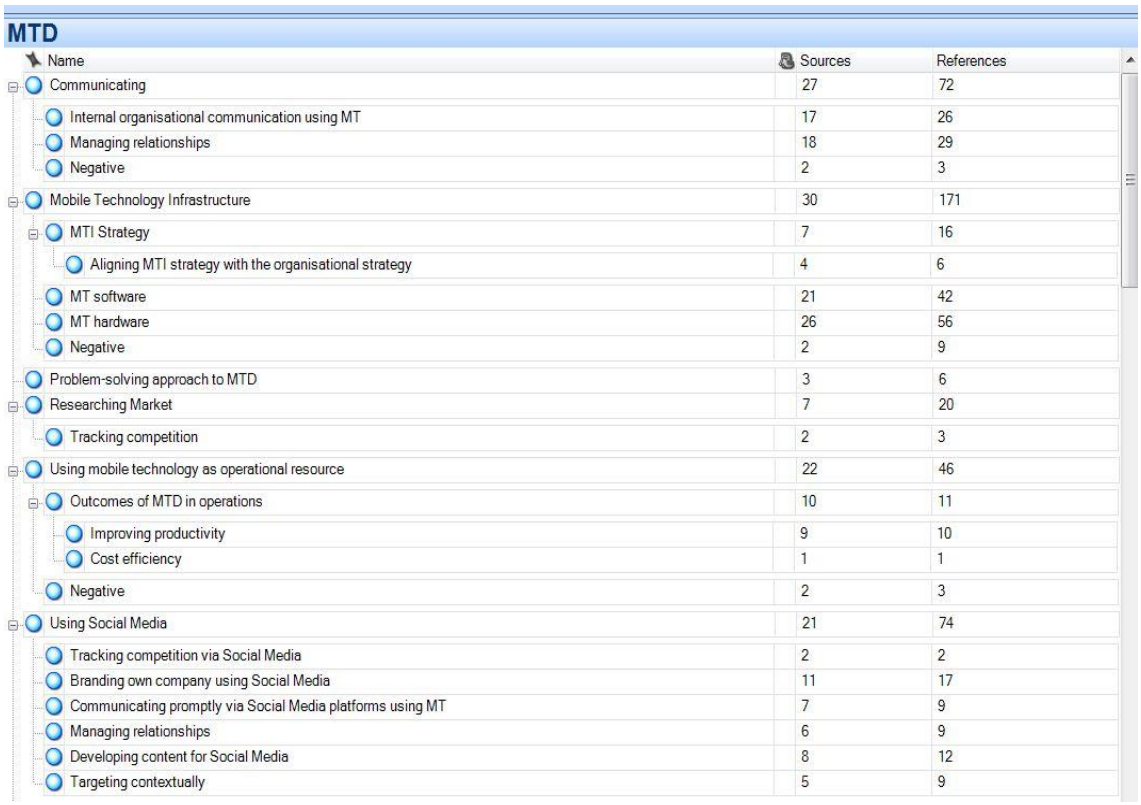
Is there a value in participating? Participants can benefit by contributing to the knowledge on the nature of mobile technologies competences and providing empirical evidences on the impact of mobile technologies application in stimulating the innovation practices in the creative sector.

What if I have concerns? Any questions about study participation may be directed to the Elvira Bolat at ebolat@bournemouth.ac.uk. Any ethical concerns about the study may be directed to the research administrator in the Business School at Bournemouth University, Denise George at bsresearch@bournemouth.ac.uk.

Again, thank you. Your interest in participating in this research study is greatly appreciated.

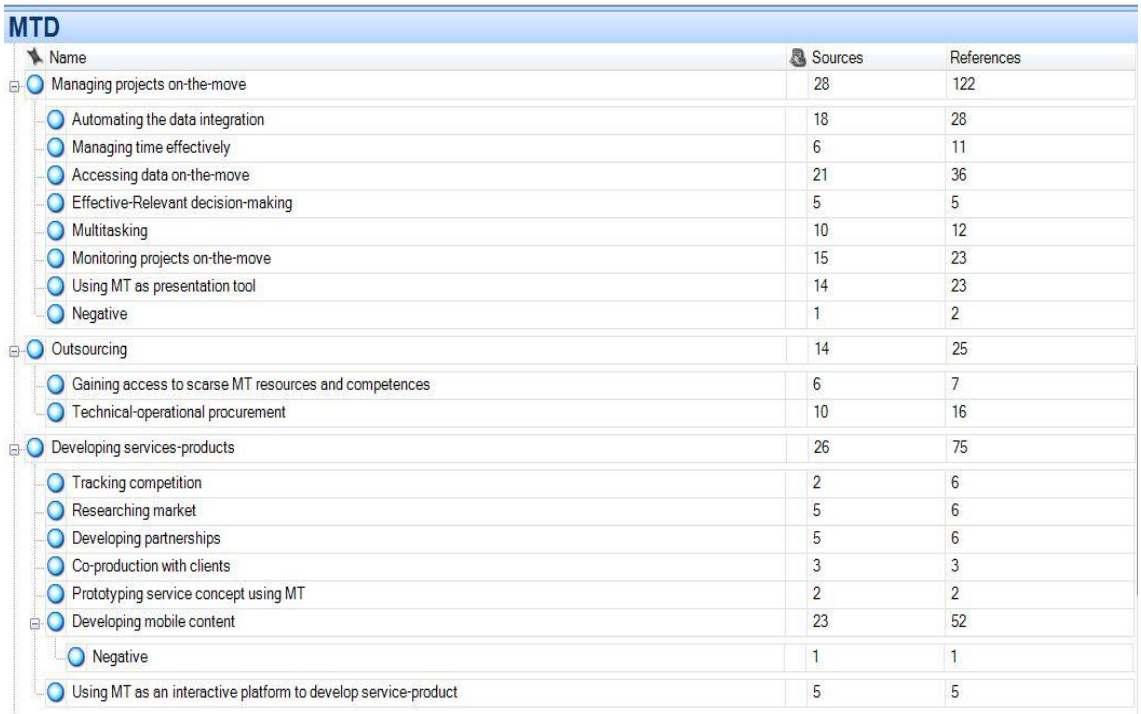
This study has been reviewed and received ethics approval through the Business School Research Committee at Bournemouth University (University Research Ethics Committee (UREC) at Bournemouth University).

Appendix G: Screenshot of Nvivo Categories



MTD

Name	Sources	References
Communicating	27	72
Internal organisational communication using MT	17	26
Managing relationships	18	29
Negative	2	3
Mobile Technology Infrastructure	30	171
MTI Strategy	7	16
Aligning MTI strategy with the organisational strategy	4	6
MT software	21	42
MT hardware	26	56
Negative	2	9
Problem-solving approach to MTD	3	6
Researching Market	7	20
Tracking competition	2	3
Using mobile technology as operational resource	22	46
Outcomes of MTD in operations	10	11
Improving productivity	9	10
Cost efficiency	1	1
Negative	2	3
Using Social Media	21	74
Tracking competition via Social Media	2	2
Branding own company using Social Media	11	17
Communicating promptly via Social Media platforms using MT	7	9
Managing relationships	6	9
Developing content for Social Media	8	12
Targeting contextually	5	9



MTD

Name	Sources	References
Managing projects on-the-move	28	122
Automating the data integration	18	28
Managing time effectively	6	11
Accessing data on-the-move	21	36
Effective-Relevant decision-making	5	5
Multitasking	10	12
Monitoring projects on-the-move	15	23
Using MT as presentation tool	14	23
Negative	1	2
Outsourcing	14	25
Gaining access to scarse MT resources and competences	6	7
Technical-operational procurement	10	16
Developing services-products	26	75
Tracking competition	2	6
Researching market	5	6
Developing partnerships	5	6
Co-production with clients	3	3
Prototyping service concept using MT	2	2
Developing mobile content	23	52
Negative	1	1
Using MT as an interactive platform to develop service-product	5	5

Appendix H: Example of Memo

Memo 1: Reflection on initial data collection – Transfer stage

So far, the opinion on mobile technology being unique is consistent throughout the cases where mobile technology is perceived to be distinctive to other stationary IT. It is suffice to say that the distinctiveness weighs heavily on experiences derived from mobile technology application and use rather than on technological and functional characteristics of technology itself. Moreover, technology is viewed as a tool but capabilities of mobile technology result in creation of new services. However, one case within the study has stated that there is not anything distinctive about mobile technology and businesses are forced to apply these technological artefacts just due to external social and economic pressure.

Nevertheless, the subject of mobile technology capabilities has been approached within variety of directions such process-orientation and outcome or performance-orientation. In the majority cases, the first mention on the MTC concept stimulates discussion on actual outcomes of mobile technology applications. However, further discussion has triggered in-depth exploration on how the whole process of mobile technology employments works within respondents' firms. As a result, the majority of incidents of phenomena represent action codes. According to Denzin and Lincoln (2000), action codes facilitate the patterns identification stage because issues are addressed dynamically meaning that respondents discuss process activities mostly rather than illustrate static phenomena.

Questions related to service innovation practices entailed confusion due to challenging attempts of respondents' to define the service innovation and to retrospectively analyse whether their company has produced innovations. However, the connection to mobile technology and direct stimulating impact of mobile technology application on service innovation practices, based on of all 14 interviewees' opinion, supported the discussion of service innovation aspects.