UNIVERSITY OF GHANA

DYNAMIC CAPABILITY ANALYSIS OF GHANAIAN MOBILE BUSINESS ORGANISATIONS

BY

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THIS THESIS/DISSERTATION IS SUBMITTED
TO THE UNIVERSITY OF GHANA, LEGON IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE AWARD OF MPHIL OPERATIONS AND MANAGEMENT INFORMATION SYSTEMS DEGREE

JULY 2013

DECLARATION

I do hereby declare that this work is the result of my own research and has not been presented by anyone for any academic award in this or any other university. All references used in the work have been fully acknowledged.

I bear sole responsibility for any shortcomings.

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CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down by the University.

_____ _____

Dr. Richard Boateng Date

(Supervisor)

DEDICATION

To the one who is holistically mature

Whose heart is being taught to endure

Whose hands are being taught how to make wealth

But already knows how to give back in health

One I'd not attempt no matter how long to fling

This work to you, Doctor Richard Boateng

And to He who talked me out of difficulty

To me the same demystified simplicity

And urged me to maintain the try

My keystrokes to you, Doctor Erasmus Addae

ACKNOWLEDGEMENTS

My utmost appreciation to Jehovah Most High
He who throughout my life has been ever nigh
Bringing in many miracles untold
But pouring them one by one as my days unfold

To John, Rudolph, Ekow, Johnny, and Conrad
All at Mobile Content.com...many thanks to you that you had
Time and patience for me face-to-face and e-mail
Else my data collection procedure was going to fail

Nandimobile took me in like an intern
All speaking with ease on their turn
Edward, Anne, Michael, Serlorm, Belinda and Joseph
None ever posed as an ivory-towered Caliph
Explaining and showing me all needed documents
So I can truly make and substantiate my arguments

I need to mention my Head of Department, Dr. John Effah
For putting me in check when I seemed to be heading afar
His comments during our seminars and conference
Need to be honoured with special reverence

Big thank you to my parents, Mr. & Mrs. John and Rejoice Budu
How can I take out my siblings all of whom bear the name of Budu
Audelia, Michael, Philip, Edem and Kwabena
I could not have finished but for many a prayer
You said to provide inspiration and strength
Throughout the programme in all its length and breadth

The Fiscians, Mama Naana, Kobby, and Araba
I hold gratitude for you now and in the future
In saving some of the best for last
I am very grateful to all my friends present and past
Who volunteered to do proofreading for me
Like Nana Darkoa, Ken, Walter, Charles and Sammy

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ABSTRACT

Individual and business consumers are increasingly adopting mobile devices and mobile services. Technology research in taking its usual cow paths has predominantly focused on the consumer adoption of mobile phones and mobile services. There is a somewhat silence in research on how firms in the mobile technology ecosystem develop these mobile services for consumption or adoption by individuals and businesses. This silence is more severe for mobile business organisations (MBOs), which act as third-party mobile value-added service (MVAS) providers/creators, as compared to mobile network operators. This study attempts to address this imbalance. The study seeks to investigate how mobile business organisations develop capabilities to provide mobile services (content and applications) for adoption by individual and business consumers. Specifically, it engages a critical realism approach to examine the type of m-business capabilities Ghanaian MBOs possess, how they use these capabilities to create m-services for consumer and business adoption/consumption. A prevailing theoretical approach for understanding how firms create capabilities from their resources is the dynamic capability (DC) framework, which measures a firm's propensity to continue changing its resource base in response to its competitive environment. Based on the DC framework, this study contributes a theoretically-based and empirically tested research model to explain the how MBOs deploy and manage resources to create capabilities, going beyond the generic frameworks that may not apply to the specific context of m-business. This study also identifies a set of m-business capabilities that MBOs can draw on to become market leaders or stay in competition. In addition, this study lends support to measuring the impact of firms' dynamic capabilities as either market-based impact or financial impact. This helps to some extent to overcome the ambiguities of measuring overall firm performance and/or competitive advantage.

CHAPTER ONE

INTRODUCTION

1.1 Research Background

The importance of mobile computing devices in this era cannot be overemphasised. Such devices can provide users with features which are ordinarily not available in standard mainframe- and desktop-based information systems e.g. convenience, mobility, and location-independence (Genova, 2010). This shortfall seems to have necessitated the proliferation of mobile devices such as feature phones, smart phones, tablet computers and phablets (i.e. tablet computers that have mobile phone communications as well). These devices signal the dawn of the post-PC era, which has within it, a *mobile disruption* causing a shift from desktop computing to mobile computing and a general worldwide transition to mobile technology (CiteWorld, 2009; Tweney, 2013; Forbes, 2013). Even computing device manufacturers have begun closing their desktop computer production lines to focus on producing mobile devices (Tofel, 2013).

Naturally, high adoption and use inform this transition to mobile devices. For instance, the number of mobile cellular subscriptions in the world is about equalling the planet's population. 6.8 billion out of 7.1 billion people have a mobile cellular subscription (International Telecommunications Union [ITU], 2013a). The adoption is by both individuals and businesses. While individuals may use such devices for business, personal and social purposes, businesses may use them to stay in contact with partners and customers, and to access current information. One important observation in business adoption is that enterprise systems developers and vendors like SAP are creating mobile-ready versions of their systems (Schierholz, Kolbe, & Brenner, 2007). The foregoing observations and trend have four main implications.

First, the interplay amongst various players in the production and consumption of mobile devices and services form a *mobile business ecosystem* (Choon, Hyung, & Dam, 2004; Bose & Chen, 2010). This ecosystem includes players like device manufacturers, mobile value-added service (MVAS) providers, and mobile network operators, business and individual customers.

Second, the activities and interactions within and amongst the corporate players, hereinafter referred to as *mobile business organisations (MBOs)*, and individual players, create highly competitive environments where each entity seeks to win market share (Camponovo & Pigneur, 2003; Bose & Chen, 2010; Veremis, 2013). The underlying mobile technology around which the MBOs operate also has the potential to affect their strategic management (Barnes, 2002). This threat and the high competition suggest a need for MBOs management to ensure survival and growth. It is thus natural that the managerial aspect of technology is the most important (Willems & Ketler, 1999).

Third, as innovation, price and performance rivalry increases with competition; there is the need for MBOs to continuously create and evolve strategies to achieve goals (Feurer & Chaharbaghi, 1996). These goals may be either financial e.g. increase in revenue or market-based e.g. to release an industry-changing product like Apple Inc.'s products.

Fourth, the increasing production and adoption of mobile devices also create the need for the development of more mobile value-added services (MVAS) (or m-services for short) (Wang & Lin, 2012). This need reflects in the different mobile application platforms including Windows, Android, and Apple, and the explosion of mobile service (m-service) usage (Tweney, 2013).

Overall, it seems that we understand the factors influencing people's adoption of mobile devices and m-services. We may also understand how business customers are using mobile devices and services. However, do we understand the creation of m-services? Do we know how MBOs put resources together to create those m-services amidst the high competition?

1.2 Research Problem

The post-PC era underlies a maturing body of research known as *mobile computing* within the management information systems discipline (Wiredu & Sorensen, 2006; Ladd, Datta, Sarker, & Yu, 2010). Mobile computing covers several themes of the mobile phenomenon. One of such themes is *mobile business* or *m-business*, which embodies research about the *industry* or *business* aspect of the mobile technology (Fouskas et al., 2005; Scornavacca, Barnes, & Huff, 2006; Ladd et al., 2010). Further, m-business embodies research about business models and strategies, mobile applications and mobile services, the use of mobile technologies by both individual and business consumers, macroeconomic and policy implications of mobile technology, and infrastructure (Ladd et al., 2010).

Encouragingly, the m-business field has seen so many valuable academic studies. However, there is a seeming dominance of research about consumer issues. These studies provide understanding about factors influencing consumers' adoption of m-services (e.g. Shim, Ahn, & Shim, 2006; Laukkanen, Sinkkonen, Kivijärvi, & Laukkanen, 2007; Kumar & Lim, 2008; Riquelme & Rios, 2010; Gomez-Barroso et al., 2012; Tobbin, 2012). In addition, there are some studies about the organisational aspects of m-business about various issues e.g. business models and creating customer value in m-services (Methlie & Pederson, 2007; de Reuver & Haaker, 2009; Johansson et al., 2012; Ghezzi, 2012; Gonçalves & Ballon, 2011) [see Chapter Two for a detailed literature review].

The foregoing examples provide knowledge about individual and business adoption of mobile technology and services; and how MBOs and non-MBOs modify their business models to cater for mobile technology. Nevertheless, these studies also suggest a seemingly overlooked issue i.e. the creation of m-services. The statistics and trend presented in the previous section depict a high adoption of mobile devices, an attendant effect on the need for m-services, and high competition amongst MBOs. These noted, one general but relevant question we could ask, and whose response is missing in academic literature is, *how do MBOs create m-services*? Since businesses use resources to create their products and services (Wade & Hulland, 2004), we could also ask what resources MBOs use to create m-services. Further, since MBOs may need to resources around to produce the m-services, we could ask; how do MBOs manage their resources to create the m-services? The search for empirical answers forms the basis of this study and the research purpose presented in the next section.

1.3 Research Purpose

Based on the missing response to the research problem, the purpose of this study is to explore how Ghanaian mobile business organisations deploy, develop, and manage resources to create m-business capabilities to create m-services.

1.4 Research Objectives

In relation to the purpose of this study, this study's objectives are

1. To explore the capabilities Ghanaian MBOs use to develop mobile services for individual and business adoption/use.
2. To explore the resources Ghanaian MBOs use to develop m-business capabilities to create mobile services.

3. To understand how Ghanaian MBOs develop and deploy resources to create capabilities to create m-services.
4. To explore the impact m-business capabilities have on Ghanaian MBOs.

1.5 Research Questions

The main research question for this study is *how do Ghanaian mobile businesses deploy, develop and manage resources to create m-business capabilities?* Based on this question and the research gaps found from the extant literature, the following sub-questions would be answered;

1. What capabilities do Ghanaian MBOs use to develop mobile services for individual and business adoption/use?
2. What resources do Ghanaian MBOs use to develop m-business capabilities to create mobile services?
3. How do Ghanaian MBOs develop and deploy resources to create capabilities to create m-services?
4. What is the impact of m-business capabilities on Ghanaian MBOs?

1.6 Chapter Outline

This study has eight chapters. Chapter One introduces and provides a background to the study, and an overview of the discrepancies in existing literature. Chapter Two is a detailed review of existing literature to explore gaps in m-business in terms of issues and conceptual approaches. Chapter Three contains discussions leading to a research framework. Chapter Four discusses the philosophical assumptions of this study and their interrelationships with data collection and analysis methods. Chapter Five presents an overview of the mobile

business ecosystem in Ghana. Chapter Six presents evidence of m-business capabilities and m-service creation in two Ghanaian MBOs. Chapter Seven explores the evidence to inform research propositions and lessons. Chapter Eight draws conclusions and abstractions, and presents the theoretical, practical, and policy contributions of this study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

As identified in the previous chapter, the ever-increasing rate of adoption and use of mobiles and m-services has numerous effects on individuals and businesses. These effects have spurred valuable research seeking to study and understand the phenomenon and its interrelationships with business. This section thus undertakes a review of m-business research to facilitate the advancement of knowledge, close saturated and uncover new research areas (Webster & Watson, 2002).

2.2 Mobile Business – an overview

Balasubramanian, Peterson, & Jarvenpaa (2002) observe that m-business lacks a formal conceptualisation. This void has led to seemingly ad hoc definitions of the term in literature (see Table 2.1 for a list of various definitions). These definitions conceptualise m-business as either a service (e.g. Muller-Veerse, 1999; Clarke, 2001 and Barnes, 2002 as cited in Woolfall, 2006), technology (e.g. Fouskas et al., 2005; Giaglis, 2006), or as a product (e.g. Lehner, 2003 and Zobel, 2001 as cited in Schierholz, Kolbe, & Brenner, 2007). Woolfall (2006) provides a definition that depicts an interaction of technology, product and service by defining m-business as "...the means by which multiple actors conduct discrete or relational exchanges of economic or social value via a wireless network".

Table 0.1: Some definitions of m-business

Author(s)	Definition / conceptualisation
(Muller-Veerse, 1999, Clarke, 2001 and Barnes, 2002 as cited in Woolfall, 2006, p. 266)	any monetary transaction conducted directly or indirectly via a mobile telecommunications network.
(Lehner, 2003 and Zobel, 2001 as cited in Schierholz et al. (2007)	the application of mobile technologies to improve or extend business processes, and open new market segments
Fouskas et al. (2005)	communication, information exchange and transactions conducted over mobile or wireless networks
Giaglis (2006)	the ways in which mobile communication technologies can be applied to address the requirements of mobile users that need to access a varied range of applications and services through wireless access devices
Woolfall (2006)	the means by which multiple actors conduct discrete or relational exchanges of economic or social value via a wireless network

Source: Author's construct

Based on the definitions (in Table 2.1), and aiming to advance and develop m-business theory, this study conceptualises m-business as *the application of mobile devices to execute a firm's functions internally and in dealing with its external stakeholders (i.e. partners, suppliers and customers*. This definition attempts to combine Giaglis' definition (using mobiles to address user requirements), Woolfall's (multiple actors conducting exchange), and Fouskas et al.'s (information exchange over mobile networks). Here the users or multiple actors could either be an individual or a firm, the exchange could be done amongst or between individuals and firms, all enabled by mobile or wireless technologies. This definition not only captures customer issues, but firm-level issues too, creating a broader basis for m-business discussions.

With respect to the definition [of m-business] this study further examines the nature of transactions and participants involved in the use of mobile technology. From existing literature, there are three types of mobile technology use in terms of the actors involved. These are

i. business to business (B2B); this targets business customers e.g. using PDAs to keep track of transactions amongst firms (Lee & Park, 2008).
ii. business to consumer (B2C); targeted at final individual customers
iii. business to employee (B2E); targeted to company employees (Balocco, Mogre, & Toletti, 2009).

In addition, drawing from e-commerce literature there could be some mobile applications targeted at government (i.e. B2G), those targeted at inter-consumer use (i.e. C2C), and those used by consumers to offer value to businesses (i.e. C2B) (Moodley & Morris, 2004; Piccoli, 2011). Governments are also considering the delivery of services using multiple channels including mobile and wireless devices i.e. m-government (Ntaliani, Costopoulou, & Karetsos, 2008; Hung, Chang, & Kuo, 2013). Table 2.2 shows a categorisation of mobile services and applications.

Table 0.2: Category of Mobile Services/ Applications

Category	M-applications	M-technologies	User
General Information Service • Firm-push advertisement • Customer-pull advertisement	Mobile news – subscribe for or browse news and other information	Voice call, SMS, MMS	Individuals/ Firms
	Mobile phone communication – send or receive messages to and from contacts	Mobile internet e.g. GPRS, EDGE	Individuals/ Firms
	Mobile Mailbox – check or send email	SMS, MMS, Mobile Internet (WAP)	Individuals/ Firms
	Mobile Search – search for information	SMS, MMS, Mobile Internet (WAP)	Individuals
	Mobile version of website	Mobile Internet (WAP)	Individuals/ Firms
Location-based service	Mobile Map – check location information, track locations and plan transportation	SMS, MMS or WAP	Individuals/ Firms
	Providing product or asset tracking information	RFID, Mobile Internet	Firms
Entertainment	Multimedia download – download pictures, music, ringtones, video clips, and e-books	SMS, MMS, Mobile Internet (WAP), IVR	Individuals/ Firms
	Caller Ring – subscribe and set customized ring-back tones	IVR, SMS	Individuals
	Mobile Voting – vote in a competition e.g. in TV reality show	SMS	Individuals
	Mobile Gaming – play a game which is either installed or downloaded unto a mobile phone or by sending messages	MMS, Mobile Internet	Individuals
Business	Mobile advertising – broadcast or send advertisements on demand	SMS, MMS, Mobile Internet, IVR	Individuals/ Firms
	Mobile Customer Relationship Management	SMS, Mobile Internet	Firms
	Mobile payment-connect a cell phone number with a bank account and provide individual banking and payment services	USSD, mobile apps, Mobile Internet	Individuals/ Firms

Source: Adapted from Jing & Xiong-Jian (2011)

2.3 M-Business Research – Issues and Evidence

M-business as a theme of the broader Mobile Computing reseach area in Information Systems, has seven subcategories including i) Mobile Business Applications/Services ii) Economics, Strategy, and Business Models iii) Consumer Acceptance/Adoption iv) Macroeconomic Cycles v) Government-Industry Interaction vi) Interorganisational Networks, and vii) Infrastructure (Ladd et al., 2010). Due to limited discussion about Government-Industry Interaction, Macroeconomic Cycles, Interorganisational Networks, and Infrastructure (Scornavacca et al., 2006; Ladd et al., 2010), and length restrictions for this study, this section's discussion focused on subcategories i, ii, and iii. The discussion was towards uncovering the dominant research issues to suggest new possible research paths in general, and for this study.

2.3.1 Mobile Business Applications / Services

This subcategory concerns the specific m-services and m-applications that firms adopt and use in their processes. Previous studies in this subcategory have focused on firm-level adoption of m-business applications from two perspectives; mandatory adoption – where firms are required by industry or government regulation to use a mobile technology (Lee & Park, 2008), and issues surrounding voluntary adoption (Liang, Huang, Yeh, & Lin, 2007; Balocco, Mogre, & Toletti, 2009). Other studies have explored the benefits of adopting m-services. These include reduction in transportation cost and increasing transparency within business processes (Schierholz et al., 2007); removal of overlapping functions and reduced back-office document handling amongst others (Rossi, Tuunainen, & Pesonen, 2007). Some challenges that have been explored are high subscription cost, customer insistence on face-to-face transactions, cost of on-net and off-net calls (Chiware & Dick, 2008; Frempong, 2009). Some studies propose frameworks to help firms surmount these challenges in firm-level

adoption of mobiles (Sinisalo, Salo, Karjaluoto, & Leppaniemi, 2007). Some of the m-services discussed include mobile library services (Cummings et al., 2010; Canuel & Crichton, 2011; Johnstone, 2011), mobile customer relationship management (Schierholz et al., 2007; Valsecchi & Renga, 2007), and mobile banking (Koenig-Lewis, Palmer, & Moll, 2010; Püschel, Mazzon, & Hernandez, 2010; Tobbin, 2012).

2.3.2 Economics, Strategy, and Business Models

Research in this subcategory relates to the production and distribution of m-services, firms' strategy, and business models. Some studies provide frameworks for predicting costs and benefits of a mobile solution (Gruhn, Kohler, & Klawes, 2007), whilst others dispute the economic impact of mobiles (Rohman, 2012). On the other hand, numerous studies show evidence of economic, social and developmental impacts of mobiles (Best, Smyth, Etherton, & Edem, 2010; Cassidy, 2006; Dunn, 2009; Gani & Clemes, 2006; Horst, 2006; Hamade, 2012; Ilahiane & Sherry, 2012; Ishii, 2006; Mutula, 2008; Ndung'u & Waema, 2011). Some of the negative outcomes of mobiles studied include phone use by criminals, infringement of privacy rights, and the creation of a dishonest society all of which have the potential to affect the economics of adopting mobiles (Cassidy, 2006; Ndung'u & Waema, 2011).

Further, some studies focus on the strategic implications of adopting mobiles e.g. to improve work processes, increase internal communication and knowledge sharing, and enhanced sales and marketing effectiveness (Sheng, Nah, & Siau, 2005). Other studies provide guidelines for firms within the mobile business ecosystem to overcome competition for instance by cooperating with network providers, releasing new products quickly (Chang, Wang, & Fu, 2009), and to have market-orientation and customer focus (Kristensson, Matthing, & Johansson, 2008; Bose & Chen, 2010; Rahman & Azhar, 2011; Isoherranen & Kess, 2011;

Jeng & Bailey, 2012). Some studies also capture how firms interpret and react to changes in the technological landscape e.g. impact of W-LAN on the activities of mobile network operators (Madjdi & Husig, 2011). Peppard & Rylander (2006) also delineate some of the issues firms should address in designing new strategy within the mobile ecosystem. Due to the potential for customers to affect firm strategy, some studies dedicate themselves to studying how firms can respond to customer needs (Aydin et al., 2005; Jayawardhena, Kuckertz, Karjaluoto, & Kautonen, 2009; Yeh & Li, 2009; Santouridis & Trivellas, 2010; Aleke, Ojiako, & Wainwright, 2011; Srinuan, Annafari, & Bohlin, 2011; Zhou, 2011; Awwad, 2012; Hung, Yang, & Hsieh, 2012; Tobbin, 2012; Wang & Lin, 2012).

Concerning business models, issues discussed include the creation of customer value for mobile services (Methlie & Pederson, 2007); viability, reconfiguration and sustainability of business models (de Reuver & Haaker, 2009; Johansson et al., 2012; Ghezzi, 2012); search for additional revenue sources (Gonçalves & Ballon, 2011); and how to capture low-income customers (Anderson & Kupp, 2008).

2.3.3 Consumer Acceptance / Adoption

The importance of consumers reflects in arguments supporting the inclusion of clients in the delivery of mobile services (Martin, Lopez-Catalan, & Ramon-Jeronimo, 2012). This argument could thus explain the dominance of consumer research in m-business. Research about consumer acceptance/adoption focus on factors influencing consumers' adoption of m-services (Gomez-Barroso et al., 2012; Karim et al., 2010; Kumar & Lim, 2008; Laukkanen et al., 2007; Shim et al., 2006; Yang & Jolly, 2008; Bouwman et al., 2008; Deng et al., 2010; Riquelme & Rios, 2010; Wessels & Drennan, 2010; Mannukka, 2008; Tobbin, 2012; Laukkanen, 2007; Mokhlis & Yaakop, 2012; Petruzzellis, 2010; Salmi & Sharafutdinova, 2008). Whilst others provide customer categorisation schemes in terms of what influences

their mobile adoption behaviour (Kimiloglu, Nasir, & Nasir, 2010), others study the factors that inhibit customers' adoption (Dey, Newman, & Prendergast, 2011; Dunn, 2009; Koenig-Lewis et al., 2010; Püschel et al., 2010; Lu & Su, 2009). From the perspective of the actual consumers, others study actual consumer use of mobiles (Donner, 2008; Sey, 2009; de Angoitia & Ramirez, 2009), and switching behaviour (Lee, Yu, Yang, & Kim, 2011; Srinuan et al., 2011; Nikbin, Ismail, Marimuthu, & Armesh, 2012).

2.4 Conceptual Approaches to m-business research

This section discusses the conceptual approaches to m-business research to suggest conceptual gaps for future research. According to Heeks and Bailur (2006) there are four types of such approaches i.e.

i. *theoretically-based approaches* i.e. the clear use of an identifiable theory that can be applied or tested
ii. *framework-based approaches* i.e. the use of a framework derived from a body of theoretical work, for analysis
iii. *model-based approaches* i.e. application of a model without reference to a deeper body of knowledge
iv. *concept-based approaches* i.e. use of a defined concept with no theoretical grounding
v. *category-based approaches* i.e. use of a prescribed set of factors for analysis

With an aim to contribute to theory, this following review concentrated its discussion on only theoretically-based, and framework-work based approaches used in m-business research. Table 2.3 lists some of the papers, the issues discussed and the conceptual approaches used.

M-business research guided by theoretically-based approaches tends to be replete with Consumer Acceptance/Adoption theme. The theories employed include the Technology Acceptance Model in either its original form (Amin, 2008; Yang & Jolly, 2008; Zhou, 2011; Tobbin, 2012) or extended form by adding on certain constructs (Akturan & Tezcan, 2012; Lule, Omwansa, & Waema, 2012; Okazaki, Skapa, & Grande, 2008; Wessels & Drennan, 2010). TAM is sometimes combined with the Theory of Reasoned Action (e.g. Kim, Ma, & Park, 2009; Liu & Li, 2010; Lu & Su, 2009; Lee, Cheung, & Chen, 2007; Riquelme & Rios, 2010; Koenig-Lewis et al., 2010), and the Task Technology Fit model (Pagani, 2006) to form a theoretical basis. On the other hand, some studies simply modify original theories to explore the research objectives. For instance, because TAM is based on volition, it cannot measure mandatory technology adoption hence it is modified to create the Technology Satisfaction Model (Lee & Park, 2008). Other evident clear-cut theories include Unified Theory of Acceptance and Use of Technology (Yang, 2010); game theory (Woolfall, 2006); theory of disruptive competition and innovation (Gillwald & Mureithi, 2011); economic theory (Au & Kauffman, 2008); the Expectation-Confirmation Model (Hung et al., 2012); and Media richness theory (Lee et al., 2007).

Framework-based approaches include one providing directions for an organisation to choose a suitable mobile solution (Gruhn et al., 2007), one for analysing the business side of mobile/wireless technologies (Kang, Lee, & Tsai, 2011), one for developing viable business models (de Reuver & Haaker, 2009), and one for ensuring collaboration amongst m-business ecosytem players (Jing & Xiong-Jian, 2011). Other ‘popular’ frameworks employed include the Strategy orientation framework (Isoherranen & Kess, 2011), and the developmentof a Fit-viability model the the adoption of mobile technology in business (Liang, Huang, Yeh, & Lin, 2007).

Table 0.3: Some Conceptual approaches in Previous M-business Research

M-business Subcategory	Research Issue	Classification of conceptual approach	Article Reference
Mobile Business Applications / Services	Modelling and analysis of mobile business processes	Framework	(Gruhn et al., 2007)
	Framework for the application of mobiles to customer relationship management	Framework	(Schierholz et al., 2007) (Sinisalo et al., 2007)
	Integrating perceived loss of control with user satisfaction and Technology Acceptance Model (TAM) to explain B2B market performance	Theoretical	(Lee & Park, 2008)
	A conceptual framework to examine the effect of relationship conflict and cooperation on the business processes of a partnership	Theoretical	(Woolfall, 2006)
Economics, Strategy, and Business Models	Business model techniques and analysis	Framework	(Johansson et al., 2012) (Methlie & Pederson, 2007) (Ballon, 2007a) (de Reuver & Haaker, 2009) (Braet & Ballon, 2008) (Anderson & Kupp, 2008) (Ghezzi, 2012) (Hawkins & Ballon, 2007)
	Determining of factors accounting for firm's perceived performance of mobile commerce using Technology-Organisation-Environment framework	Theoretical	(Martin et al., 2012)
	Strategic analysis of mobile phone industry using from a value chain perspective	Framework	(Chang et al., 2009)

Consumer Acceptance / Adoption	Examination of initial trust in mobile banking adoption	Theoretical	(Zhou, 2011)
	Three elements of TAM used to identify differences in adoption of mobile data services for two age cohorts	Theoretical	(Yang & Jolly, 2008)
	Adoption of mobile technology for fashion goods	Theoretical	(Kim, Ma, & Park, 2009)
	Quality factors that influence customer trust	Theoretical	(Yeh & Li, 2009)
	Determinants and motivations of consumer mobile technology adoption and/or use	Theoretical	(Yang, 2010) (Püschel et al., 2010) (Liu & Li, 2010) (Akturan & Tezcan, 2012) (Tobbin, 2012) (Amin, 2008) (Hung et al., 2012) (Okazaki et al., 2008) (Wessels & Drennan, 2010) (Jayawardhena et al., 2009)
Consumer Acceptance / Adoption	Service quality's impact on customer satisfaction and customer loyalty	Framework	(Santouridis & Trivellas, 2010)
	Impact of telecommunications development on the quality of life	Theoretical	(Rohman, 2012)

Source: Author's construct

2.5 Discussions and Future Research Areas

As observed by Scornavacca et al. (2006), there seems to be a dominance of consumer research in m-business. It is however encouraging that, some research exists about other subcategories. This review's contributions lie in the attempt to provide a holistic definition and to highlight the dominant themes and conceptual approaches to m-business research. The evidence presented in this review imply that first, apart from gaps potentially overlooked in the 'Infrastructure', 'Macroeconomic Cycles', 'Government-Industry Interaction', and

'Interorganisational Networks' subcategories, there is the need for on-going research into the 'Economics, Strategy, and Business Models' subcategory because of high dynamics in the mobile industry (Ladd et al., 2010). Further, there is room to contribute to the general 'Mobile Theory and Research' category by adapting and/or testing more theoretically grounded approaches in m-business research. The evidence presented suggests some areas for further research.

First, concerning Mobile Business Applications/Services, firms face numerous uncertainties and challenges, in the adoption of mobile technology for business activities. Since some firms overcome such challenges it, would be helpful to understand and document the solutions to these challenges as a way of ensuring m-business transformation (Tsai & Gururajan, 2007). Detailed case studies documenting how firms overcome such challenges would provide useful insight and a roadmap for others seeking to implement mobile technologies.

Another area that could be studied is the impact of mobile technology on a firm's managerial functions. Overall, the pointers and discussions in previous reviews suggest that a tendency for more research to focus on the adoption of m-services by firms which are non-core members of the m-business ecosystem (see Liang et al., 2007; Lee & Park, 2008; Chiware & Dick, 2008; Balocco et al., 2009; Frempong, 2009). Such valuable studies naturally study the related impact of mobiles adoption. Meanwhile, there are other aspects of the m-services trajectory fallow for research. Drawing from the four stages within the Informatics lifecycle by Heeks (2006), and the Baskerville and Myers (2004) definition of management information systems, we see that researchers can study the *development*, *adoption*, *use*, and *impact* of information systems. With current research seemingly focused on adoption, use,

and impact, there is room for research in to the development phase – how m-services are created.

Second, within Economics, Strategy and Business Models; previous studies focus on economic and non-economic impact of adoption, strategic implications of mobile adoption, overcoming competition, how to respond to technological changes, and responding to customer needs. The focus of previous valuable research suggest a need to understand their how mobile business organisations (MBOs) combine internal and external resources to create new resource combinations (Koruna, 2004). These combinations should be useful in for instance, overcoming the threats of competition, technological changes, and customer demands. The m-business special issue of The Journal of Policy, Regulation and Strategy for Telecommunications is some evidence of the seeming paucity of empirical studies about how MBOs combine resources to create m-services (Ballon, 2007b). There is the need to go beyond the current frontier to study managerial processes within MBOs, especially due to the many unresolved business challenges pertaining to the deployment and management of value-added mobile services (Giaglis, 2006).

Third, research under the Consumer Acceptance/Adoption subcategory needs extension in the face of advocacy for the inclusion of customers in the delivery of mobile services (Martin et al., 2012). Further research could explore how MBOs harness customer perceptions as part of their value-creation process. Previous research points the way for companies to attract low-income consumers; by reconfiguring their value chain according to a strategic pattern compatible with their business model type (Ghezzi, 2012). One question to ask is how companies should do that reconfiguration. The search for a response to this question raises the need for empirical research into how to do such reconfiguration, and what best practices

to follow. A study in this direction would help provide knowledge about the existence or otherwise of any company that has succeeded or failed in a reconfiguration effort.

Generally, it seems that mobile network operators (MNOs) dominate firm-level m-business research (see Anderson & Kupp, 2008; Ballon, 2007a; Chang, Wang, & Fu, 2009; Gonçalves & Ballon, 2011; Srinuan et al., 2011). To provide a holistic insight into m-business, other firms within the m-business ecosystem needs studying. This need is supported by the observation of focus shifting to value addition and content creation, and [hence] from mobile network providers to other players in the mobile ecosystem (Peppard & Rylander, 2006). Further, since the usage of third-party applications have a bright future (Verkasalo & Hämmäinen, 2007; Methlie & Pederson, 2007) firms like mobile value added service providers are also important members of the mobile ecosystem that need studying. Other firms include service providers, service creators, mobile operators, handset and manufacturers (Smura, Kivi, & Töyli, 2009). M-service creation by MBOs would be a promising area for research into the effects of business model choices on performance, and the actual process of creating value through m-services.

In terms of conceptual approaches, the focus of the issues as discussed in Section 2.3 mirrors a concentration of conceptual approaches to studying consumer acceptance, adoption and use of mobiles and m-services. As pointed out in the foregoing discussions about possible future research directions, there other information systems theories could be tested in the mobile business research field towards arriving at conceptual approaches for the field. The creation and availability of such m-business-specific conceptual approaches would contribute to a better understanding of the mobile computing phenomenon and its contribution to the broacher information systems discipline.

The evidence presented in Section 2.4 about existing conceptual approaches in m-business research the need for frameworks that for instance, capture mobile use and benefits obtained by firms in various industries. So far, attempts have been made to understand this dimension from the perspective of individual users (e.g. Boateng, 2011). Such research could be extended to understand firm-level impacts of mobile adoption. According to the evidence presented, research so far has borrowed from and extended the benefits of using ICTs in commerce or trade to its mobile equivalent (Amit & Zott, 2001; Boateng et al., 2008). For instance, the mobile for development perspective posits three effects that mobiles have on adopters i.e. incremental, transformational, and production (Heeks & Jagun, 2007; Batchelor & Scott, 2004). Incremental effects are those benefits from using mobile phones to improve what a firm already does e.g. communicating with customers and partners. Transformational effects are benefits from using the mobile phone in creating new things or accessing new services e.g. mobile banking. Production effects are benefits from trading in or selling mobile phones and related services. Current benefits captured by research relate to incremental and transformational effects, hence there is room for research into the production effects of mobiles e.g. how mobile applications are created and sold to customers – both individual and corporate. Further, as there are different levels of e-commerce capabilities, which determine the level of e-commerce adoption by firms (Boateng, Heeks, Molla & Hinson, 2008), it may be plausible to argue for the existence of capabilities that determine the extent of firm-level adoption of mobiles and m-services. An m-business capabilities framework similar to that of e-commerce would thus be helpful in enhancing our understanding about the creation and/or adoption of mobiles.

Overall, two main focal points informed by the issues, evidence and past theoretical approaches discussed here seem fertile for future m-business research. The first is *Research*

into business dimension of m-business: Current research is skewed toward adoption issues – amongst both individual and corporate consumers. There is the need to understand, the process of developing firm resources to create capabilities used to create the mobile services consumer adopt. The internal and external conditions and factors/resources that facilitate the process could also be explored to a holistic understanding of the process.

The second is *theory development*. Even though the IS discipline has key theories e.g. TAM, there is the need for the development of key theories specifically for mobile business in order to grow the area. This may be achieved by adapting and/or testing such IS theories with the m-business or m-computing sub-discipline.

The foregoing discussions and future research areas have implications for this study. these implications border on the specific gap underlying this study, the choice of theoretical foundation, research paradigm, and research design. The next section discusses these implications.

2.6 Implications for this study

2.6.1 Research Gap – why m-services creation?

The previous sections attempted a review and discussion of previous research about mobile business. From the evidence presented and the future directions suggested, this study intends to study the creation of mobile services by mobile business organisations i.e. mobile value-added service (MVAS) providers. Since consumers can use m-services only if they are created, there is need to understand how they are created. The decision to study this gap is informed by

i. the need for research about the business side of m-business

ii. room for research into the development of m-services, and

iii. the need to satisfy departmental expectations for writing a dissertation – to have an organisational focus.

2.6.2 Research Paradigm – why Critical Realism?

To study the research gap identified requires an in-depth understanding of the activities and processes that go on behind the creation of mobile services. Studying this phenomenon is different from studying for other aspects of m-services e.g. how consumers use m-services, and perhaps their perceptions towards them. While a positivist approach would attempt to generalise findings about m-services, an interpretivist approach would provide interpretations of the m-services from the researcher's and/or consumers' point of view (Easton, 2010). Meanwhile, as the m-services form our observed reality, the research gap is embedded with the need to understand what causes the reality – how the m-services are created – hence the need to adapt the critical realism philosophy, which seeks to unearth the underlying mechanisms of our observed realities (Dobson, 2002; Mingers, 2004). (See Chapter 4 for a detailed explanation of the paradigm and its application in this study).

2.6.3 Theoretical Foundation – why dynamic capabilities?

Having found a research issue in mobile business, why would no information systems theory or framework other than the *dynamic capability* framework be applicable to studying the issue? In other words, why would absorptive capacity, social capital, socio-materiality and any other theory or framework not work? We must note that these theories, frameworks and concepts have their own constructs and phenomenon they posit to measure or explain. For

instance, research about the same m-service phenomenon from an Actor-Network theory perspective, would attempt to follow various actors in the m-business ecosystem actors to see how they attempt to influence m-services from their own perspectives (Rhodes, 2009, p. 4). Similarly, Game theory, as Woolfall (2006) used, may study m-services from the point of view of how firms select which m-services to create, how MBOs decide on which mobile network(s) on which to launch an m-service.

All these aspects of the m-services phenomenon are important research endeavours towards achieving holistic knowledge of m-services. Since studying all these aspects is far-fetched in a single study like this, only one aspect was chosen for investigation (see Section 2.6.1). To understand how m-services are created. Since m-services are products of a firm, investigating the chosen gap would suggests a need to explore the resources these firms use to create the m-services; without these resources the firms cannot offer m-services (Wade & Hulland, 2004). The Resource-based theory (RBT) helps us identify these resources better; it posits that over time, resources are heterogeneous across all firms, and a source of competitive advantage (Barreto, 2010; Kraaijenbrink, Spender, & Groen, 2010). This static nature is unable to explain a firm's competitive advantage over time in their changing environments, hence the need to adapt the dynamic capability framework (Teece, Pisano, & Shuen, 1997; Priem & Butler, 2001) (See Chapter 3 for an overview of the framework and its operationalisation). There are high uncertainty and competition levels within the mobile business ecosystem (Camponovo & Pigneur, 2003; Bose & Chen, 2010; Veremis, 2013). These conditions make it an ideal environment to study how firms evolve their resources to create firm outputs i.e. m-services. The choice of the DC framework not only helps study the identified gap better, it provides room to contribute to the building a better theory – with its application in mobile business and information systems which previous reviews have

implicitly suggested (Barreto, 2010). It also contributes to the m-business literature which is seemingly dominated by technology-deterministic theories like Technology Acceptance Model (see Section 2.4).

2.6.4 Research Context – why Ghana?

The increasing global rate of mobile adoption reflects in that of emerging countries as well. In fact, emerging markets such as Latin America, the Middle East, Africa and Asia are the more promising areas for mobiles and mobile services (Rannu, 2013; Veremis, 2013). In Ghana, mobile subscription is now reported to be in excess of 26 million (National Communications Authority [NCA], 2013; ITU, 2013b). Interestingly, this number exceeds the total population as reported i.e. 2010 census: 24,658,823 (Ghana Statistical Service [GSS], 2012, p. 1); July 2013 estimates: 25,199,609 (Central Intelligence Agency [CIA], 2013). Such statistics make emerging economies including Ghana, prime research settings. Conversely, the amount of mobiles research from this setting is not encouraging. Valuable studies including the study of mobiles and mobile services' use by individuals (Sey, 2009; Boateng, 2011; Tobbin, 2012; Stork, 2011); and business' use of mobiles (Frempong, 2009), leave much room for more research in about this modern phenomenon. This study is a response to contribute to mobiles research about and from Ghana.

Similarly, whilst the resource-based theory and its extension, the dynamic capability framework have been used extensively, first there has been little discussion about these theories in information systems (Wade & Hulland, 2004, p. 108). Such paucity is even more severe in the mobile computing and mobile business research sub-field. Meanwhile as these theoretical approaches are context-dependent, we cannot readily extend the findings from

other fields into mobiles without empirical basis (Collis, 1994; Winter, 2003; den Hertog et al, 2010).

In addition, there is paucity of dynamic capability research from the African context. Even though some valuable research exist from the South African context about dynamic capabilities in an automobile firm (Witcher, Chau, & Harding, 2008); and how SMEs safeguard dynamic capabilities while collaborating with large companies (Sawers, Pretorius, & Oerlemans, 2008). These studies reveal the need for more research from the Ghanaian context, and about mobiles (as previously identified). This study seeks to respond to this paucity.

2.7 Summary

This chapter set out explore the mobile business theme of the mobile computing area in information systems research. The aim was to find the most researched issues, and most used theoretical approaches in the area, to suggest areas which need more research. The evidence presented and the subsequent discussions suggest the need for more research away from the adoption-centric research that seems to dominate the m-business field on both the consumer and organisational front. With this in mind, this study identified and chose as its motivation, to understand how mobile business organisations (MBOs) create mobile services (m-services) for use by individuals and businesses. Since this gap requires the study or the MBOs' resources and related activities that create these m-services, the chapter presented an argument for the choice of the dynamic capability framework. The chapter also argued out for Critical Realism as an appropriate paradigm, and Ghana as the study context. The next chapter presents an overview of the dynamic capability framework and adapts its constructs to the arriving at a research framework for the study.

CHAPTER THREE

CONCEPTUALISING MOBILE BUSINESS CAPABILITIES

3.1 Introduction

The previous chapter made a case for a proposed holistic definition of the term m-business.it also reviewed existing m-business literature to explore gaps within the field. In the end, this led to the selection and justification of a gap, theoretical approach, research philosophy and context. In pursuit of finding answers to the research questions, this chapter discusses literature relating to the chosen theoretical approach towards arriving at a research framework of how MBOs create m-services. The research framework based on the dynamic capability framework, shows the resources, the capability development process and its outcomes, and the impact of the developed capabilities in an MBO.

3.2 Dynamic Capabilities – an overview

Dynamic capabilities emanates from an earlier paradigm called the Resource-based theory (RBT) of a firm, which is used to explain how and why firms develop the capability to gain and sustain competitive advantage (Penrose, 1959; Schendel, 1994). RBT was criticised to predict a firm's competitive advantage based on firms' heterogeneous resources, and failing to account for market dynamism; making it static. Further, RBT suggests that firms compete based on their internal characteristics and resources (Amit & Schoemaker, 1993; Wade & Hulland, 2004).

RBT's extension, the Dynamic capabilities (DC) approach on the other hand, reflects the notion that firm-specific resources, specifically capabilities, can be rebuilt or combined with

other resources to develop new assets and capabilities. Wang and Ahmed (2007) defines dynamic capabilities as the manner in which a firm keeps integrating, reconfiguring, renewing and recreating its resources and capabilities and, most importantly, upgrading and reconstructing its core capabilities in response to the changing environment to attain and sustain competitive advantage. Similarly, DC is the capacity of an organisation to purposefully create, extend or modify its resource base (Helfat et al., 2007, p. 4). After a review of the major definitions including those mentioned herein, Barreto (2010) defines dynamic capability as "*the firm's potential to systematically solve problems, formed by its propensity to sense opportunities and threats, to make timely and market-oriented decisions, and to change its resource base*". Overall, the focus is on the mechanisms that cause some changes to organisational resources in response to its environment. This focus allows the dynamic capability approach to avoid criticisms levelled at the resource-based view (Easterby-Smith, Lyles, & Peteraf, 2009).

The next section provides a breakdown of the components towards a research framework for this study.

3.2.1 Defining Resources and Capabilities

Resources form the foundation of a firm and the basis of a firm's capabilities (Wang & Ahmed, 2007). Resources could be conceptualised as the "assets and capabilities that are available and useful in detecting and responding to market opportunities" (Wade & Hulland, 2004: 109). Sanchez, Heene, and Thomas describes assets as tangible or intangible type of resources that a firm uses in "its processes for creating, producing, and/or offering its products (goods or services) to a market, whereas capabilities are repeatable patterns of actions in the use of assets to create, produce, and/or offer products to a market" (as cited in Wade & Hulland, 2004, p. 109). Even though assets and capabilities could be a source of

competitive advantage as the resource-based view of the firm posits, such advantage is not sustainable. This creates the need to turn resources into a source of sustainability. Dynamic capabilities come into play when firms recombine organisational resources to enable the firm continually create value (Landroguez, Castro, & Cepeda-Carrión, 2011). These resources include human capital i.e. managers and employees, technological capital, knowledge-based capital, and tangible-asset-based capital. Helfat et al.'s (2007) definition (the capacity of an organisation to purposefully create, extend, or modify its resource base) specifies that no matter the effect, the action of dynamic capabilities is foremost upon the firm's resource base, including both tangible and intangible assets and capabilities (Easterby-Smith et al., 2009).

Second, an organisation's capability is "a high-level routine (or collection of routines) that together with its implementing input flows, confers upon organisation's management as a set of decision options for producing significant outputs of particular type" (Winter, 2000 in Winter, 2003, p. 991). These routine(s) could be considered as first order, core, or dynamic depending on the rate of change their outputs bring to an organisation. According to the understanding from Wang and Ahmed (2007, p. 39),

- A firm which uses resources to attain a desired goal exhibits 'first order' capabilities.
- A firm which integrates resources and capabilities in the strategic direction of the firm exhibits core capabilities.
- A firm which constantly renews, reconfigures and recreates resources, capabilities and core capabilities to address the environmental change exhibits dynamic capabilities.

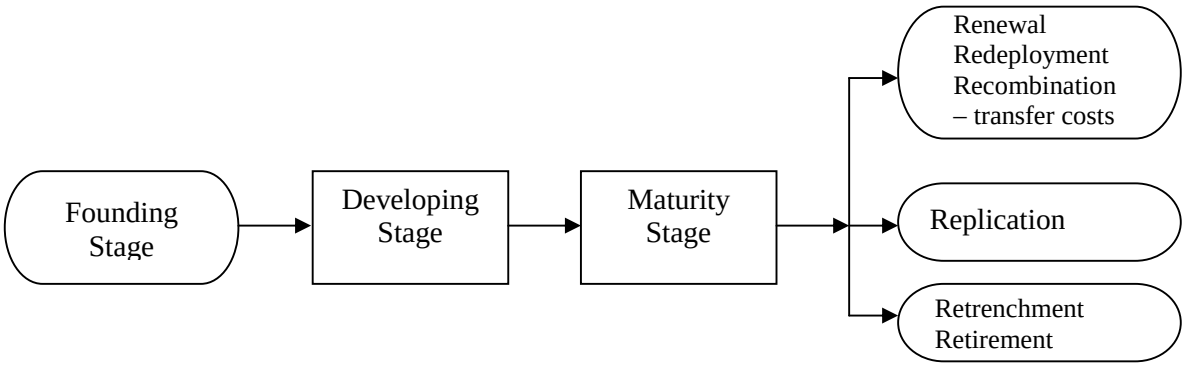
Examples of capabilities include technical skills, managerial skills, systems development or systems integration (Wade & Hulland, 2004). A very important point to note is that a firm exhibits dynamic capabilities with a '*strategic orientation*'. Strategic orientation implies a firm's perception and willingness to take advantage of a profit-laden opportunity in its

environment depending on the firm's current and 'gettable' resources (Pitelis & Pseiridis, 1999: 227). Doving and Gooderham (2008) also refer to the same concept as *strategic choice*.

3.2.2 Developing Capabilities

The capability lifecycle (Helfat & Peteraf, 2003, p. 1000) captures how firm resources evolve through a set of possible paths. The resource or capability lifecycle enables the rebuilding of existing resources into new resources to create benefits for the firm. The lifecycle involves three main stages i.e. the founding, developing and maturity stage.

Figure 3.1: The Capability Lifecycle



Source: Helfat and Peteraf (2003)

At the *founding stage*, the firm identifies why a new resource or new capability should be created. Here, the firm needs to identify the necessary current assets and processes, and organise them around the purpose for creating the new resource. The reason here is that, the new resource is created by combining the existing resources or by acquiring new ones, depending on the access that the current resources create e.g. financial and social capital. It could be argued that not all firm resources may be useful. As such, RBT posits that to create and sustain a performance beyond that of its competitors in the marketplace, a firm's resources must be heterogeneous and immobile, and to have that potential the resources must simultaneously have attributes of being valuable, rare, imperfectly imitable and not

strategically substitutable or non-substitutable by other resources (Barney, 1991; Bowman & Ambrosini, 2003). The attributes are briefly explained as follows:

- Valuable: A firm's resource is valuable if it is able to help the firm conceive of and implement strategies capable of exploiting opportunities and neutralising threats in its environment and thereby generate rents, improve its efficiency and effectiveness (Bowman & Ambrosini, 2000).
- Rare: Beyond having rent-generation abilities, a resource has to be rare, uncommon or scarce in its functionality and not just its type – functionality lies in the combination of resources such as tangible, intangible and organizational assets (Bharadwaj, 2000).
- Imperfectly imitable: Resources become imperfectly imitable when competitors have more difficulty in replicating them. Imperfect imitability rises from the presence of isolating mechanisms (Rumelt, 1984); when, first, a firm's unique historical conditions enable it to own or have access to a particular resource; second, the link between resources and the firm's sustained performance is causally ambiguous, and last, resources themselves are socially complex in nature (Barney, 1991). These isolating mechanisms increase the costs of competing firms in imitating a successful firm's resources.
- Non-substitutable: A resource is non-substitutable when it can neither be imitated exactly or different resources could be used to create the effect that the original resource has, especially through a low-cost strategy (Bowman & Ambrosini, 2003).

RBT states that valuable and rare attributes enable firms to limit competition to establish a superior resource position, which earns rents for the firm - creates competitive advantage (Bowman & Ambrosini, 2003, p. 291). The next two attributes, inimitable and non-substitutable, enable the firm to sustain the competitive advantage or limit competition to the

rent-generating ability of resources after the superior position has been established (Peteraf, 1993). However, not all resources are inimitable and non-substitutable. Firms need to have the ability to evolve resources – identify, develop and renew or decline – to acquire higher order attributes which ensure sustained performance.

In the *developing stage*, the firm searches and examines viable alternatives to develop the resource. Using the dynamic capabilities framework by Teece et al. (1997), organisational processes or embedded capabilities are developed through coordination, learning and reconfiguration.

- *Coordination* is recognising and examining how the current resources, current processes, and asset positions agree with, and complement each other.
- *Learning* comes by repetition and experimentation that enable a firm to acquire tacit knowledge to perform its processes better and quicker to create innovation in existing processes, and to identify new processes (Teece et al., 1997). Learning happens through improvisation, trial-and-error, and experimentation (Miner, Bassoff, & Moorman, 2001).
- *Reconfiguration* happens when the firm's quickly changing environment is examined in order to cause a change in the firm's current assets structure and processes towards sustaining the firm strategic value. After this stage, the development of the resource may cease and enter the maturity stage.

At the *maturity stage*, the resource or capability is maintained by continuous use such that it becomes part of the firm's memory and culture. After the maturity stage, the capability passes through one of six additional stages of the lifecycle namely; retirement (death), retrenchment, renewal, replication, redeployment, and recombination. *Retirement* is when threats or extreme

conditions force the firm to retire the resource e.g. prohibition of the sale of a product may retire a resource such as a manufacturing plant used to produce that product (Helfat & Peteraf, 2003: 1006). Sometimes, the threats' levels are not enough to cause a sudden retirement but rather reduced exercise of the resource or capability causing *retrenchment*. Other times, instead of retrenching, the firm may enter a new development stage in which the resource may be modified to suit a new situation i.e. *Renewal*. When the firm brings the resource back to a different but slightly related use, there is *redeployment*. *Replication* is where competences from one economic or geographical setting is transferred to another (Teece et al., 1997). *Recombination* occurs when the original resources are put together with other resources to create entirely new resources. This may be in the firm's current market or an entirely new market.

3.2.3 Impact of Capability Development

The impact of the capability evolution process is a matter of contention within existing literature. Presently there is a debate about the association between dynamic capabilities and performance impacts (Easterby-Smith et al., 2009). Whilst the originally intended impact seems to be competitive advantage (Teece et al., 1997), subsequent studies posit various impacts including financial and market performance (e.g. Malik & Kotabe, 2009; Wang & Ahmed, 2007), partnership success (Sawers et al., 2008), competitive success (Witcher et al., 2008), entrepreneurial performance and transgenerational value (Chirico, 2007). Zahra, Sapienza, and Davidson (2006, p. 919) provides a lengthier list of possible outcomes. To avoid confusing and conflicting measures, it may be appropriate to study the specific kind of impact generated in the firm or industry in which a dynamic capability-based study is done. On the other hand, grouping such impacts [irrespective of the firm or industry] under financial or market-based impacts may foster construct refinement.

3.3 Evolution of M-business capabilities in MBOs

The purpose of this study is to investigate how mobile business organisations (MBOs) develop capabilities to create mobile services i.e. content and applications. This section operationalises the constructs in the DC framework as explicated in section 3.2 in the context of m-business and MBOs. MBOs refer to firms in the m-business ecosystem such as mobile network operators, mobile value added service (MVAS) providers, handset manufacturers, platform providers et-cetera.

3.3.1 Conceptualising Resources and Capabilities in MBOs

From the overview of the DC framework, resources could be conceptualised as the "assets and capabilities that are available and useful in detecting and responding to market opportunities" (Wade & Hulland, 2004: 109). Since mobile business organisations (MBOs) are ICT-based firms (see Appendix A), there is the tendency to have and use information system resources – both assets and capabilities – which Wade and Hulland (2004) classify as either *outside-in*, *spanning*, and *inside-out* (see Figure 3.2 for examples).

Figure 3.2: A Typology of Information System Resources

Outside-In	Spanning	Inside-Out
• External relationship management • Market responsiveness	• IS-business partnerships • IS planning and change management	• IS infrastructure • IS technical skills • IS development • Cost effective IS operations

Source: Wade and Hulland (2004, p. 112)

Using this classification makes up for the need to identify the VRIN attributes of each resource in the firm. Hence, we only those resource which fall in the Wade and Hulland's typology are acceptable here.

3.3.2 Developing M-business Capabilities

From the overview of dynamic capabilities (see Section 3.2.2), there are three stages MBOs would go through to develop m-business capabilities to create m-services. At the *founding stage*, an MBO determines why a new resource should be created. For instance, why should we employ a marketing manager, or build a mobile app. This decision is also based on the idea that the marketing manager or new server may be valuable, rare, imperfectly imitable or non-substitutable. At the *developing stage*, the MBO searches and examines viable alternatives to develop the resource by

- *Coordinating* i.e. the MBOs explores how the new marketing manager or server agree with the existing resources e.g. other managers or technology setup.
- *Learning* i.e. the MBO attempts to perform its processes better and quicker, and identify new processes through improvisation, trial-and-error, and experimentation. Either the individuals in the MBO or the MBO itself (either within or from partners and competitors) may do learning.
- *Reconfiguration* i.e. the MBO examines its quickly changing environment in order to cause a change in its current assets structure and processes towards sustaining strategic value. After this stage, the development of the resource may cease and enter the maturity stage.

At the *maturity stage*, the MBO maintains resources by continuous use such that it becomes part of the firm's memory and culture, and growing into a new capability – *m-business*

capability. The type of m-business capability may vary. An ensuing question then is, what types of m-business capabilites can MBOs create? A response to this inquiry must have cognisance of the differences capabilities have in different firms (Witcher et al., 2008, p. 556), and hence the potential for m-business capabilities to differ amongst the different types of MBOs. For instance, whilst a mobile mobile value added service (MVAS) provider will have the capability to develop a payment platform, a mobile phone manufacturer may have the capability to develop a smart phone.

This study's focus was on MVAS providers, hence m-business capability here is the ability to create/provide a mobile value-added service or m-service for a client or market. To conceptualise the types of m-business capabilities, the study adapted a model of firms' e-commerce applications i.e. *no e-commerce, connected e-commerce, static e-commerce, interactive e-commerce, transactive e-commerce, and integrated e-commerce* (Molla & Licker, 2004). The resulting [m-business] capabilities are however not hierarchical because, an MBO may choose which capability to develop because of its strategic orientation. Therefore an MBO [specifically MVAS providers] could have the following m-business capabilities;

- *Informational*; where an MBO has the ability to create/provide an m-service for the purpose of sending information or for communication purposes only e.g. an application for sending bulk messages to many customers and/or partners at the same time.
- *Interactional*; where an MBO has the ability to create/provide an application/platform to respond to queries, or give instant and intelligent feedback e.g. an instant messaging application.

- *Transactional*; where an MBO has the ability to create/provide an m-service for the exchange of value, and to create or manage [client] accounts e.g. a mobile payment application, or mobile banking application platform that allows subscribers to pay for purchases using funds from their bank accounts.
- *Transformational*; where an MBO has the ability to create/provide an m-service which spans across, and manages all business functions at the same time e.g. HR, marketing, production et-cetera.

In reference to the categorisation of mobile services/applications [in Section 2.2.3], this study posits that the type of m-service an MBO (i.e. an MVAS) creates is dependent on the type of m-business capability it develops. The table below illustrates the m-business capabilities, their related m-applications and mobile technologies.

Table 3.1: Types of M-business Capabilities

M-business capability	Category of M-services	M-services	M-technologies	User
Informational	General Information Service	Mobile News	Voice call, SMS,	Individuals / Firms
		Mobile phone communication,	MMS	Firms
		Mobile Mailbox	Mobile Internet	Individuals
		Mobile Search	SMS, Mobile Internet	Individuals
		Mobile website	Mobile Internet	Individuals / Firms
		Mobile advertising	SMS, IVR, Mobile Internet	Individuals / Firms
		Mobile CRM	IVR, SMS	Firms
	Location-based service	Mobile map	SMS, MMS, Mobile Internet	Firms/ Individuals
		Product and asset	Mobile Internet	Individuals

		tracking		/Firms
Interactional	Entertainment	Multimedia download	Mobile short codes, SMS, USSD, IVR	Individuals /Firms
		Caller ring	IVR, SMS	Individuals
		Mobile Gaming	SMS	Individuals
		Mobile Voting	SMS	Individuals
Transactional	Business	Mobile payment	USSD, mobile apps,	Individuals / Firms
		Mobile banking	Mobile Internet	Firms

Source: Author's construct

After the maturity stage, the m-business capability may be

- *Retired* i.e. threats or extreme conditions force the firm to retire the resource e.g. more MBOs begin to exhibit the same capability or service that it becomes less valuable or government regulation prohibits the organisation of a mobile-based competitive promo.
- *Retrenched* i.e. the MBO reduces how much the m-business capability is used e.g. an MBO would use its bulk SMS service only internally, and not as a service for customers.
- *Renewed* i.e. the MBO modifies the existing capability to take advantage of a new situation e.g. extends an existing SMS-based service to cater for a client's specific need.
- *Replicated* i.e. the MBO uses the same m-business capability is used a different geographical market.
- *Redeployed* i.e. the MBO brings the capability back to a different but slightly related use

- *Recombined* i.e. the MBO puts the resources used to create the existing m-business capability together with other resources to create entirely new resources – either in the firm's current market or in an entirely new market. For instance, the MBO uses the same technical team to create a new mobile service.

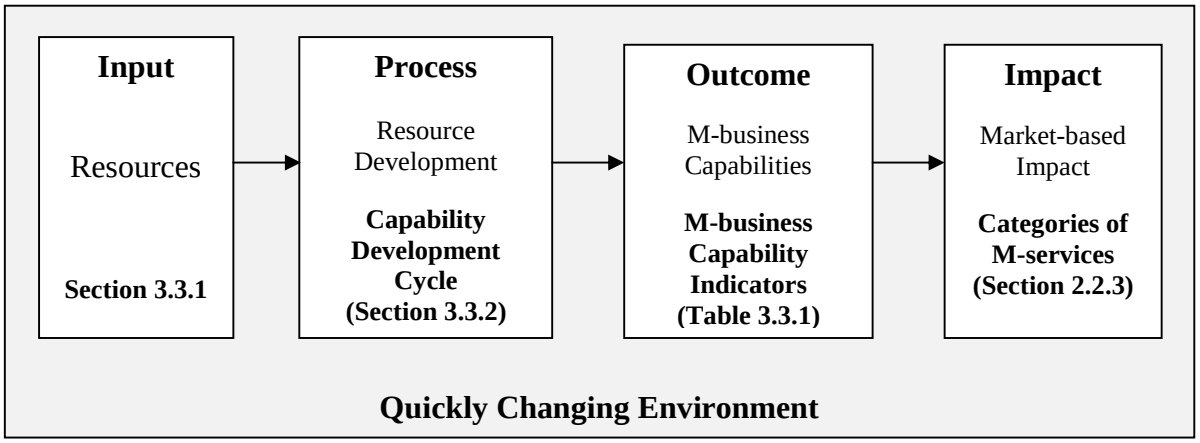
3.3.3 Impact of M-business Capabilities

As noted in section 3.2.3, the impact of capability development seems unsettled. However, based on the context-dependence of dynamic capabilities (Winter, 2003) it could be argued that the type of impact may as well be related to the type of firm, and the products and services on offer to its market. Second, the use of market-based performance and financial performance as impacts in a dynamic capabilities-based research framework by Wang and Ahmed (2007) suggest two possible types of impact created by dynamic capabilities – market-based impact and financial-based impact. Financial-based impact could be increase in revenue, profit, and/or stock prices. Market-based impact could be increase in market share and the perceptions that competitors and customers have of the firm and its products. Further, the context-dependence [of DC] undergirds and extends the argument for market-based impact that within mobile business organisations there would be different indicators for market-based impact. For instance, whilst the development of new mobile phone handsets would be an impact for a phone-manufacturing firm, the impact of a MVAS provider would be the rolling out of a new mobile solution. This study focuses on the market-based impact that m-business capabilities have on MBOs. Since the focus of this study is on MVAS providers, the market-based impact relate to the ability to create a new mobile-related solution (see Table 2.2 for a categorisation of m-services).

3.4 Research Framework

Overall, the discussions in the previous sections underlie this study's argument that MBOs, especially mobile MVAS providers need to develop resources create m-business capabilities. Resources include assets and capabilities that an MBO currently possesses. By evolving these resources, the MVAS provider develops m-business capabilities. These m-business capabilities (see Section 3.3.2) are developed through firm-specific resource development processes i.e. coordination, learning and reconfiguration. The argument underpinning this study is captured in a framework of understanding how a mobile business organisation's resources serve as input to the process of resource evolution that creates m-business capabilities, that creates either a financial-based impact of market-based impact. The following figure is the research framework for this study.

Figure 3.3: MBOs create m-business capabilities to create m-services



Source: Author's construct

3.5 Summary

The dynamic capabilities framework is still at a young stage with many opportunities for refinement and deepening of the model (Easterby-Smith et al., 2009). To this end, this chapter based on the need to understand how mobile business organisations (MBOs) develop create mobile services, presented a prevailing paradigm that helps understand the issue. The

presentation also led to the generation of a research framework. The framework suggested that MBOs need resources, which go through some interaction and processes to develop capabilities MBOs use to create the m-services individual and business customers use. These assumptions were operationalised and tested empirically to evaluate and redefine them. The next chapter describes the methods used for collecting evidence about the constructs in the research framework.

CHAPTER FOUR

METHODOLOGY

4.1 Introduction

The previous chapter discussed and presented the dynamic capability framework as the theory for this study. The discussions led to the creation of a research framework to guide empirical testing of the concepts in the framework. This chapter presents a detailed discussion of the research methodology for this study. It explains the research paradigm, research design, data collection and analysis methods used.

4.2 Research Paradigms

According to Kuhn (1970), a paradigm is a "set of beliefs, values and techniques which is shared by members of a scientific community, and which acts as a guide or map, dictating the kinds of problems scientists should address and the types of explanations that are acceptable to them" (p. 175). Paradigms create the philosophical assumptions, which define what 'valid' research is, and the appropriate applicable methods for that study (Myers & Avison, 2002). Even though there may be others, three main paradigms exist within the general discipline of information systems research i.e. Positivist, Interpretive and Critical Realism (CR) (Mingers, 2004). Positivistic paradigm vouches for value-neutral empiricism, and aims at discovering general laws governing the social phenomenon under study (Wardlow, 1989). Interpretive paradigm goes beyond people's observable actions in the context of a social phenomenon to understand the subjective meanings people assign to their actions (Klein & Myers, 1999). However, CR-based paradigm assumes that the perceptions of reality (or social phenomenon) are value-laden continuously, but there are relatively enduring "underlying structures and mechanisms" (Dobson, 2002). With the aim of understanding these relatively enduring

structures and mechanisms underlying social phenomenon, CR aims to explain social phenomenon instead of predicting (Elster, 1998, p. 45).

Since the essence of this study is to understand an unclear phenomenon of how MBOs create capabilities to create m-services, employing CR for study was useful (see Section 2.6.2). CR helped uncover the hidden and underlying structures i.e. resources, m-business capabilities, and the capability development processes that may not be readily observable behind the m-services. Further, there was room for knowledge contribution using CR in empirical – quantitative or qualitative – information system (IS) research; even though CR has penetrated IS research, a bulk of studies are extremely theoretical (De Vaujany, 2008).

The next section illustrates the use of CR for this study's research methodology.

4.3 CR-based Research Methodology

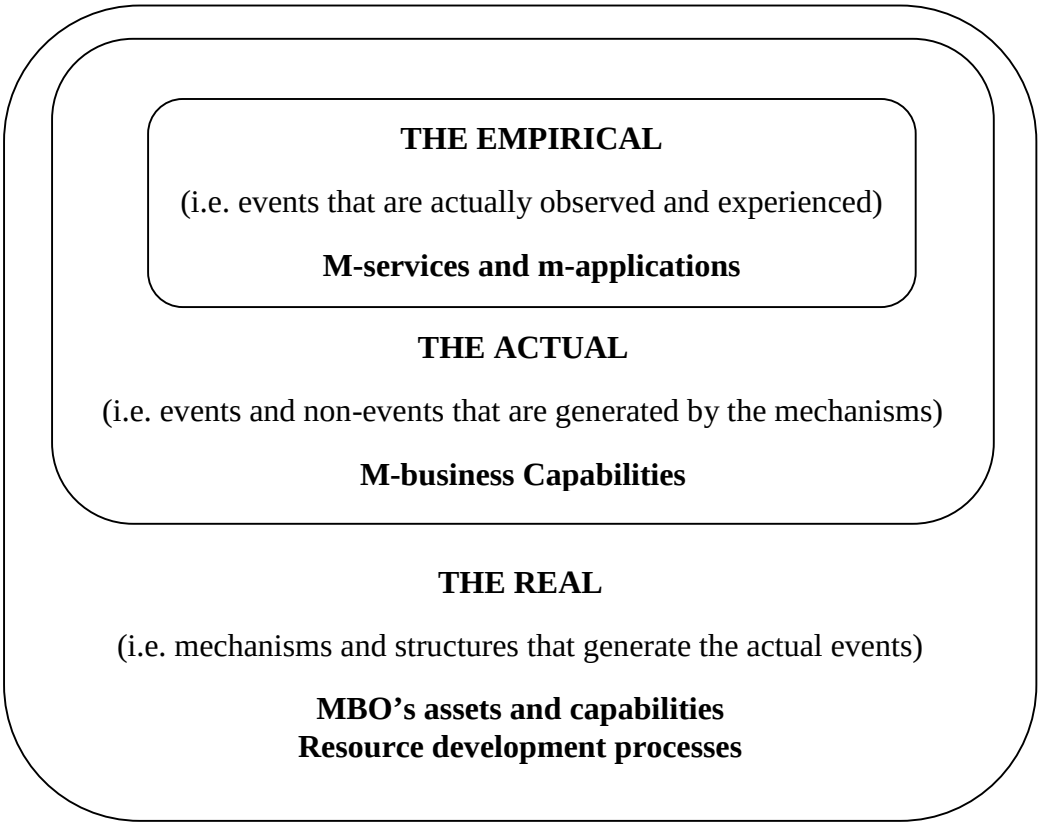
A major idea in using Critical Realism (CR) is that reality is both intransitive and stratified (Easton, 2010). First, intransitivity means that the existence of reality does not depend on the existence of humans. Second, there are two forms of stratification which are;

i) Mechanisms: Mingers (2004) explains these as producers of reality, and the subset of events that are actually experienced. There are three domains of reality i.e. *real*, the *actual*, and the *empirical* (Bhaskar, 1978). The *real* contains mechanisms, events, and experiences – i.e. the whole of reality; the *actual* consists of events that do (or do not) occur and includes the *empirical*, those events that are observed or experienced (Easton, 2010).

ii) Realm of objects themselves: this refers to where causal powers at one level (e.g. chemical reactions) can be seen as generated by those of a lower level (atomic valency).

> "The picture of the real is thus one of a complex interaction between dynamic, open, stratified systems, both material and non-material, where particular structures give rise to certain causal powers, tendencies, or ways of acting, often called 'generative mechanisms'. The interaction of these generative mechanisms, where one often counterbalances another, causes the presence or absence of actual events" (Mingers, 2004).

Figure 4.1: Three Domains of the Real



Source: Adapted from Mingers (2004)

In reference to Figure 4.1, first, the *empirical reality* consists of the m-services individual and business consumers observe and use on mobile devices. Second, the *actual reality* refers to the m-business capability that enables MBOs create those m-services (See Table 3.1). However, there is an underlying *real reality* causing the formation of these m-business capabilities. The real reality consists of resources, and resource deployment and development processes within MBOs (see Section 3.3.2). This study's focus was on capturing knowledge about the real reality i.e. how MBOs create m-services (see Section 1.3).

To capture this knowledge, CR proposes that researcher applies retroduction as a research strategy (Danermark, Ekstrom, Jakobsen, & Karlsson, 2002; Mingers, 2004). The strategy of retroduction begins with examining observed events and connections between the social phenomenon in the actual domain. Using retroduction means to move backwards; by asking "what must be true in order to make this event possible?" (Easton, 2010). This study exhibited retroduction by reviewing existing conceptual approaches to m-business research in Chapter Two. Chapter Three also conceptualised m-business capabilities for creating m-services.

The next step was to propose how real structures and mechanisms, and their inter-relationships would explain the m-services we observe. Within this study, Chapter Three applied the dynamic capability framework to develop a research framework which proposed how MBOs develop resources to create m-business capabilities. In addition, the study attempted to present evidence of the existence of the structures and mechanisms behind the m-services. The study achieved this by selecting appropriate methods to collect data/evidence of how Ghanaian MBOs create m-business capabilities to create m-services (see Sections 4.4 and 4.5).

Collection of evidence used mixed-methods triangulation to enhance the plausibility of arguments concerning the existence of structures and mechanisms behind the creation of m-services (Danermark et al., 2002; Downward & Mearman, 2007).

- Data triangulation – i.e. data is gathered from different subjects at different times and in different situations
- Investigator triangulation – collecting and analysing data using more than one researcher
- Theoretical triangulation – making references from different theories
- Methodological triangulation – using different research methods e.g. combining multiple case studies with semi-structured interviews, documentary analysis, and artefacts examination (Section 4.5.6 for a detailed description of triangulation in this study).

4.4 Case Study as a Research Method

Research methods are tools for generating and analysing data (Sarantakos, 1998). Within this study, CR guided the selection of research methods (Dobson, 2002). Since the focus was to understand the structures and mechanisms behind the m-services, the case study research method was appropriate. The case study method is "an empirical enquiry that investigates a contemporary phenomenon within its real life context especially when the boundaries between phenomenon and context are not clearly evident" (Yin, 1994, p. 13). Further, this method is suitable to accompany CR (Easton, 2010). The characteristics of this study provides positive responses to all the questions which Benbasat, Goldstein, and Mead (1987, p. 372) suggest must be answered in judging the appropriateness of using case studies in information system research. In relation to those questions and the purpose of this study, the

use of case study was appropriate because, how MBOs create m-business capabilities to create m-services

i. cannot be studied from outside an organisation (an MBO),
ii. is a contemporary event (m-services are ever-changing and contemporary),
iii. does not need to be manipulated, but studied as is [as exists within the MBO], and
iv. enjoy a theoretical base i.e. the dynamic capability framework.

The above characteristics suggest that case study method is appropriate to answer the "how" and "why" research questions about a contemporary set of events over which the investigator has little or no control (Yin, 1994; Easton, 2010). Development and deployment of resources to create m-business capabilities to create m-services was the phenomenon investigated. The m-services could neither be separated from the MBOs nor the MBOs from the country of operation (i.e. environment). Case study method also facilitated contribution of knowledge in an area marked by rapid changes in nature and developments i.e. mobile technology. It enabled honing in on the processes within real-life contexts or natural setting to provide a strong test of prevailing explanations (theoretical propositions) or ideas and to refine knowledge about the creation of m-services (Hakim, 1987, p. 62).

As the phenomenon being studied was inseparable from its context, the case study method used an all-embracing method which incorporated specific techniques to guide data collection and analysis in direct relation to clearly state the theoretical assumptions (Hakim, 1987, p. 67; Yin, 1994, p. 13). Following a theory-building approach, there was an underpinning question, followed by real cases examined to result in a more specific set of propositions from examining the cases in real-life context (De Vaus, 2001, p. 287). As proposed, the purpose of using case study was to develop, refine and test a theory using the logic of replication – either

predicting similar results or producing contrasting results for predictable reasons (Yin, 1994, p. 45-46; De Vaus, 2001, p. 262). The primary unit of analysis is firms chosen from the Ghanaian m-business ecosystem. Their managers, staff and clients were interviewed for primary data, whilst secondary data was obtained from documentary materials, and investigator triangulation.

4.4.1 Case Study Design

This study adopted a descriptive case study approach. This type of case study requires the advance selection and review of a theory to guide the design of the case study (Yin, 1993, p. 2; De Vaus, 2001, p. 288). Based on purpose, the study selected and reviewed the dynamic capability framework (see Sections 2.6.3 and Chapter 3). The review of this strategic management framework useable in information systems research arrived at a research framework (see Section 3.4) to guide data collection.

Further, since multiple cases are suitable for studies aiming at description, theory building, or theory testing, this study undertook two case studies about m-services creation in Ghanaian MBOs (Benbasat et al., 1987). The multiple-case design also allowed for cross-case analysis and the extension of the dynamic capability framework. In reference to the main research question, the primary units of analysis of the study were Ghanaian MBOs, and the sub-units of analysis are the events that depict the development of m-business capabilities to create m-services.

4.4.2 Selecting Case MBOs

This study had some selection criteria for selecting case MBOs for the multiple case studies (Benbasat et al., 1987). The criteria dictated that first, the chosen MBO had to be engaged in

the creation of m-services *as an enterprise output* (Heeks, 2008). Therefore, for instance, mobile phone vendors and airtime vendors were dropped as potential case firms. Second, the case firms had to have been in business for at least two years and having more than two m-services. This criterion was to ensure the availability of longitudinal data to reflect the development of capabilities over time. Using formal letters, personal visits, email, website contact forms, and phone calls, author contacted fifteen MBOs which met this criterion. However, only two showed interest in participating in the study. The final case firms were Nandimobile, and Mobile Content.Com (hereinafter known as MCC). Nandimobile accepted after the author's supervisor called the Business Development Manager personally. In addition, Mobile Content.com agreed possibly because of previous participation in student seminars at the University of Ghana Business School.

4.5 Data Collection Methods

Based on the tenets of CR research, and case study research, this study used evidence from more than one source to converge and support the research findings (Benbasat et al., 1987). The sources included documentation, archival records, interviews, direct observation, and physical artefacts (Yin, 1994, p. 78).

4.5.1 Documentation and Archival Records

This data collection method was used because it provided physical evidence of m-services that case firms had created, were creating, and may create. Knowing about such m-service projects was important to identify the related m-business capabilities. This method was also important to explore the impact of the capabilities created e.g. market-based impact. The evidence examined included written material e.g. memoranda, newspaper clippings, and

formal reports. During the field study, Nandimobile availed author with some correspondence between the firm and its partners (see Appendix B). MCC also shared some evidence via email (see Appendix C). Other documentation like client agreements were confidential, therefore Nandimobile for instance displayed them for viewing only.

Archival records available included a proposal Nandimobile wrote to British Council (see Appendix D), and an organisational chart from MCC (see Figure 6.15). Nandimobile also shared some of its financial records (see Table 6.2). MCC declined to share its financial records (see Appendix C).

4.5.2 Interviews

Interviews were used because it afforded the opportunity to access first-hand information from respondents who were directly involved in the conduct and management of m-services creation activities. Documentary evidence could not show the intricacies involved in decision-making e.g. in acquiring a new resource, or deciding to pursue an m-service creation avenue – something which interviews uncovered. Face-to-face interviews also helped to deduce further questions which hitherto author may not have considered to ask if a structured survey instrument or questionnaire had been used.

Author asked respondents both open-ended and closed-ended questions from a prepared interview guide. The interview guide was to tease out some general information about the case companies e.g. their products, number of staff and dates of employment, past and recent m-services projects (see Appendix E). Upon permission from interview respondents, author used a pre-tested voice-recording device to capture all responses, whilst making notes on paper. The paper notes served as cues for follow-up questions not in the interview guide.

At Nandimobile, there was one group interview with five people including all three co-founders, one sales manager, and one technical team member. Subsequent interviews were held on individual basis with each co-founder, and one sales manager. In total, seven out of eight people were interviewed. The eight person, a sales officer declined to participate in the interview, and asked all questions to be directed to the sales manager.

At MCC, the Managing Director and three senior managers participated in interview sessions. There was a general interview with the three senior managers to have an insight into MCC's core activities and projects. Then, there was one interview with the Managing Director, followed by a lengthier interview with the senior managers. The author scheduled and conducted a final validation interview with the senior managers after three months.

For both case companies, interview transcripts were written out in report form, and shared with all the respondents through the co-founder (for Nandimobile) and the Business Development Manager (for MCC).

4.5.3 Direct Observation

Author used direct observation because especially for Nandimobile, it was difficult obtaining appointment times at which to conduct data collection activities. This is because both management and staff of Nandimobile were actively involved in company field activities like client prospecting, presentations and face-to-face customer service. Direct observation was thus useful in understanding peculiar activities related to m-services creation in its natural setting. Author joined Nandimobile as an intern for a week. There was partial participation in one company meeting, and one field visit with the company's sales team to prospective and some existing clients. This afforded the opportunity to absorb and note details, actions or subtleties of the sales team. The field trip was also a chance to ask questions about the client,

how they started using the m-service, and for what purpose. There was no direct observation at MCC because author was not granted such an opportunity.

4.5.4 Physical Artefacts

The case firms create m-services which are not necessarily tangible, thus the only source of physical artefact examination was to test the product. Artefact examination i.e. product testing was useful in understanding how the product worked, and to help verify that the product could be described as an m-service. Testing was also useful in determining the veracity of what respondents claimed about an m-service's functionality. Author tested Nandimobile's Infoline as it offers to FC Beauty Klinik's, the Business Directory, and Nandimobile *Connect* (see Figure 6.6). There was also testing of MCC's *Card Cafe*. The other services could not be tested because they were either not currently running, or for specified people whose criteria the author did not meet e.g. USAID project.

4.5.5 Other Sources of Evidence

Both Critical Realism and case study research advocate data triangulation. Thus other germane sources were examined in addition to the aforementioned ones. First, the content on the case firms' websites and other websites were also analysed. Other secondary data sources include phone-based communication (using SMS and a mobile application i.e. Whatsapp) (see Figure 6.6). This source was useful in corroborating information that may have been given me in person. Other times, this source was a way of quickly asking for and receiving information without having to visit the respondent's office, or because of readiness.

Relevant data collected from all sources discussed above formed part of the final case studies. Subsequently, the final write-up for each firm was sent to firms' managers for cross-

checking, clarification and comments. For instance, the General Manager of Mobile Content.com sent an updated version of the firm's organisational chart via email after cross-checking the case study. Nandimobile acknowledged receipt of the mail (see Appendix H). One co-founder gave clearance for the use of the case by telephone.

4.6 Data Analysis

The purpose of CR research is to find out the underlying mechanisms behind them (Mingers, 2004). Therefore, the analysis in this study instead of attempting to generalise, rather focused on understanding the main parts that cause the observed phenomenon – development of m-business capabilities to create m-services. Thus, to understand how Ghanaian MBOs create m-business capabilities to create m-services, this study first presented evidence of the phenomenon in the case firms.

Combining the research framework (see Figure 3.3) with the three domains of the real i.e. the observed phenomenon (see Figure 4.1), the analysis went through the following steps.

1. The m-services in each case firm were identified; using various data collection methods, case studies were written about case firms. The case studies revealed the availability of several m-services created by the case firms. However, because the m-services are in the empirical domain in which this study does not dwell;
2. The m-business capabilities behind each m-service in each case firm were identified. Having previously argued about the need for m-business capabilities in the creation of m-services, each firm's m-business capability was deduced from its m-service. Yet, the m-service is in the actual domain which this study could not remain but to identify;
3. The resources for each m-business capability in each case firm. Based on the proposed research framework, and this study's bid to enter the 'real' domain behind

the observed m-services, resources were a necessary input in the creation of capabilities. Thus, the resources used in creating the m-business capabilities in the case firms were identified. In addition,

4. The process for turning these resources into the m-business capabilities were explored for each firm. Further within the 'real' domain, the actual process of creating m-business capabilities to create m-services was examined in both firms using evidence from the case studies.
5. Finally, the findings from steps 1 to 4 above (for each firm) were grouped and presented according to the headings in the research framework. This made for easier comparison, and drawing of propositions and implications based on the similarities and/or differences between the m-services creation phenomenon in both case firms.

4.7 Summary

This purpose of this study is to explore how Ghanaian MBOs create m-services. The purpose of this chapter was to provide detailed information about the research methods used in this study. Previously, there was an argument for the choice of the critical realist (CR) paradigm because of the nature of the research problem and purpose (see Section 2.6.2). Furthermore, this chapter showed the effect of this choice on the whole study. For instance, CR matched the use of case study research methods (see Section 4.4). The various methods for collecting data about the case firms were also described in detail. The chapter ends with the steps used to analyse the data collected. The next chapter provides an overview of the context in which the case MBOs operate.

CHAPTER FIVE

CONTEXT OF THE STUDY

5.1 Introduction

The previous chapter described the methodological issues concerning this study. It described the chosen research paradigm and its effect on the research design and data collection methods. As seen from the discussions leading to the research framework [Section 3.4], the phenomenon under study is the development of dynamic capabilities in Ghanaian mobile business organisations (MBOs). Since MBOs are types of ICT-based enterprises [see Section 4.4.2], their environment affects their operations (Heeks, 2008). Since the environment also affects the capability development, it is important to understand the issues within the mobile business (m-business) environment. This purpose of this chapter is therefore to provide an overview of the m-business environment in Ghana to provide a foundation for the analysis of findings in the next chapter.

5.2 The M-business Value Chain in Ghana

This section discusses the mobile business value chain. The discussion adopts the m-commerce value chain framework by Barnes (2002). The framework has two main areas with six value-adding activities. The areas and activities are;

a. *infrastructure and services*: mobile transport, mobile services and delivery support, mobile interface and applications
b. *content*: content creation, content packaging, market making.

This framework shows the content and level of [m-commerce] infrastructure and services a customer can access. This study adapts the Barnes framework to analysing the value chain in a broader m-business context. The resultant discussions provide an overview of the type of

m-business content, level of infrastructure and services, and functionalities available. The discussion focuses on the Ghanaian m-business environment.

5.2.1 Infrastructure and Services

Mobile transport refers to those firms that provide communication – the transporting, transmitting, and switching for voice and data. Ghana has six mobile network operators, which provide mobile transport services and Internet connectivity. These are Vodafone, MTN, TiGO, Airtel, Glo, and Expresso. Whilst the first five are GSM-based networks, the sixth operator is CDMA-based. As at April 2013, there were **26,591,124** cellular/mobile voice subscribers in Ghana (NCA, 2013).

Table 5.1: Market Share Statistics for Mobile Network Operators in Ghana for 2013

Mobile Network Operator	January	February	March	April
MTN	45.46%	45.36%	45.43%	45.28%
Vodafone	20.79%	21.09%	21.19%	21.33%
Tigo	14.07%	14.10%	13.89%	14.00%
Airtel	12.55%	12.69%	12.79%	12.59%
Glo	6.32%	6.13%	6.08%	6.22%
Expresso	0.82%	0.62%	0.61%	0.59%
Total	100	100	100	100

Source: NCA (2013)

In terms of mobile services and delivery support, Short Message Service (SMS) is a major means of delivering services like banking alerts. The mobile Internet these networks provide

also make it possible for subscribers with smartphones to download and use other messaging applications like Whatsapp, Viber and Skype, hence bypassing the using SMS or MMS. Other Internet-enabled use of network services involves white-labelled mobile applications for specific customer activities. For instance, Vodafone has an app for *Healthline*; a public health education programme which airs on television, and extended to the mobile platform. This extension is expected to enhance interaction between the general public and selected health practitioners. The networks also have some applications embedded into their SIM cards e.g. Airtel's SIM card has *Airtel Services and Airtel money*. Whilst the submenus under Airtel Services allow customers to transfer airtime, check account information and access a range of information e.g. travel and weather, the Airtel money menu is for buying airtime, sending money, making payments and withdrawing money – all from one's Airtel money wallet which could be connected to a bank account.

5.2.2 Content

The content creation activity is the creation of digital products like audio, video and text. Mobile banking is becoming increasingly popular amongst banks in Ghana. SMS alert is a feature in almost all the over twenty commercial banks. Recently [in 2008], a fledgling non-bank deposit-taking financial institution, First Capital Plus introduced Speedbanking. This is an m-service which allows its account holders to make account deposits by purchasing a special scratch card, and sending its secret PIN to a mobile short code. The mobile short code is a [shortened] mobile phone number that subscribers pay a premium tariff when they send a message to it. Instead of a [normal] ten-digit phone number, mobile short codes are either three-digit or four-digit numbers e.g. 160 or 6262. The associated costs of communicating using short codes are higher. For instance, on-net SMS on Airtel costs Ghana cedis 0.04 (four Ghana pesewas), but between Ghana cedis 0.50 (fifty Ghana pesewas) to 1.00 (one Ghana

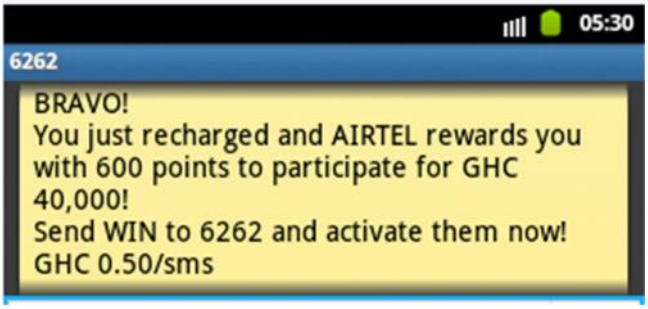
cedi) to participate in a promotion or receive a pull message. NB: 100 pesewas equals one Ghana cedi.

Figure 5.1: SMS Tariffs of Mobile Network Operators in Ghana

	MTN	Tigo	Vodafone	Airtel	Glo Mobile	Expresso	Industry Average
SMS-On Net	0.04	0.0403	0.04	0.04	0.04	0.0424	0.0405
SMS-Other Network	0.05	0.0477	0.05	0.044	0.04	0.0438	0.0459
MMS	0.18	0.212	0.19	0.18			0.1905
Data/MB	0.07	0.2	0.2	0.07	0.05	0.05	0.1067

Source: NCA (2012)

Figure 5.2: Cost of Sending a Message to a Mobile Short Code



Source: Product Test by Author

Short codes have several applications, depending on the service in which they are employed. For instance, whilst some banks use it just for alerts, others are using it to mobilise deposits. Media houses also use it to receive contributions from their audiences, and to organise voting contests. Some companies also use it as a customer contact channel i.e. instead of providing a 'long' phone number, they would rather have a short code – apparently because it is easier for customers to remember. The seeming dominance of SMS-based services reflects in the under-usage of other mobile technologies like USSD, IVR, and WAP. Boadi, Boateng, Hinson, and Opoku (2007) note in their discussions the low usage of SMS-based services. This may have been because of high illiteracy rates, but the advent of mobile data-enabled

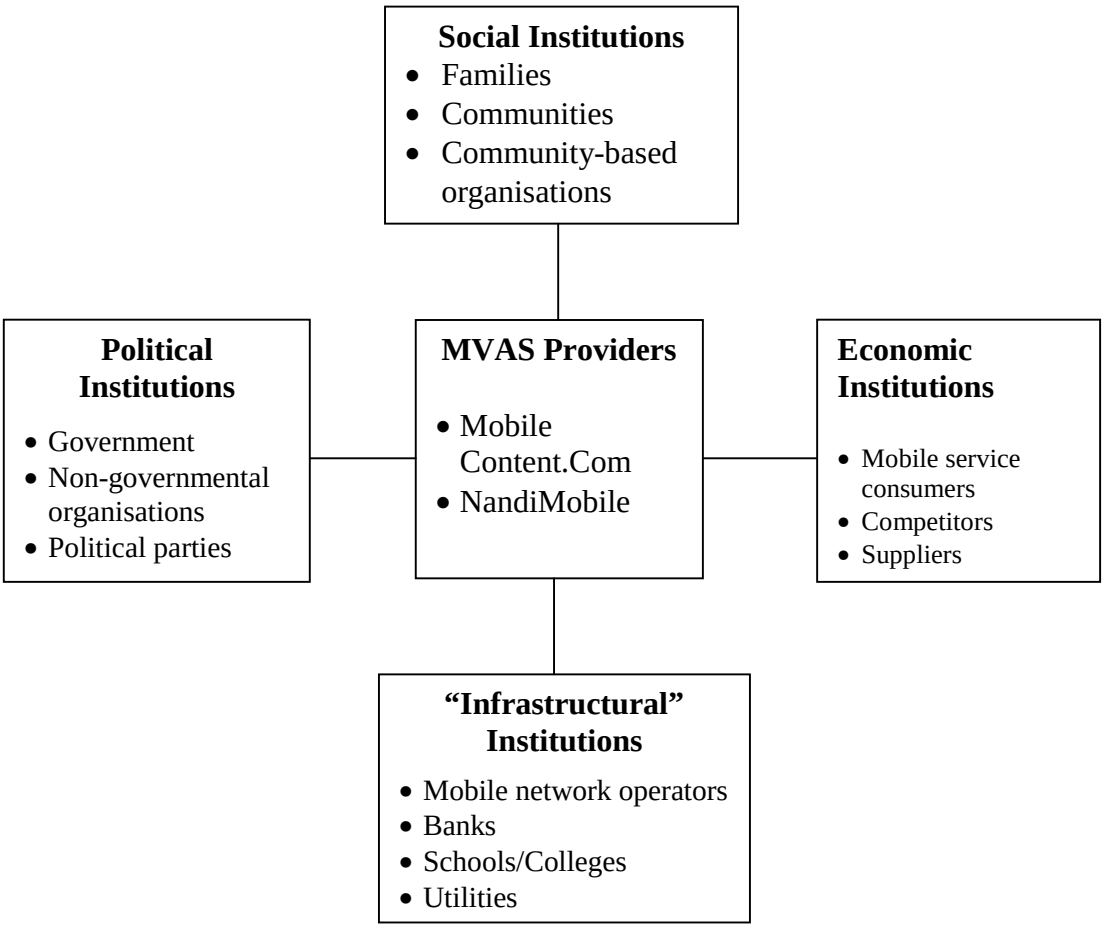
instant messaging and video clients like *Whatsapp*, *Viber* and *Skype* is likely to reduce SMS patronage further.

Barnes' framework has provided an insight into mobile infrastructure and services, and related content. To deepen understanding, the discussions herein explore two more issues – i) the stakeholders (who demand for, operate and/or provide these services and content) and ii) mobile content sectorial value chain. To achieve this, the study adapts the Stakeholder Analysis Frameworks (Heeks, 2008). Since the organisations in this study are MVAS providers [see Section 4.4.2], the ensuing analysis and discussions focus on their specific context.

5.2.3 Stakeholders

Figure 5.3 shows the various stakeholders in the mobile content provision or aggregation business.

Figure 5.3: Stakeholders of Mobile Content Providers



Source: Adapted from Heeks (2008)

MVAS providers have four main stakeholders including political institutions, infrastructural institutions, economic institutions and social institutions. First, the political institutions include the government, non-governmental organisations and political parties. Government for instance is responsible for granting operation licences through the National Communications Authority to telecommunication companies. The government also registered new entities wanting to do business in Ghana through the Registrar-General's office now combined working together to provide tax identification numbers to such companies. Non-Governmental Organisations and political parties are mostly corporate consumers of mobile telephony-based services such as those offered by MVAS providers. Social institutions also characterise families, communities, and community-based organisations all of which include many individual mobile subscribers who consume mobile-based service in one way or another.

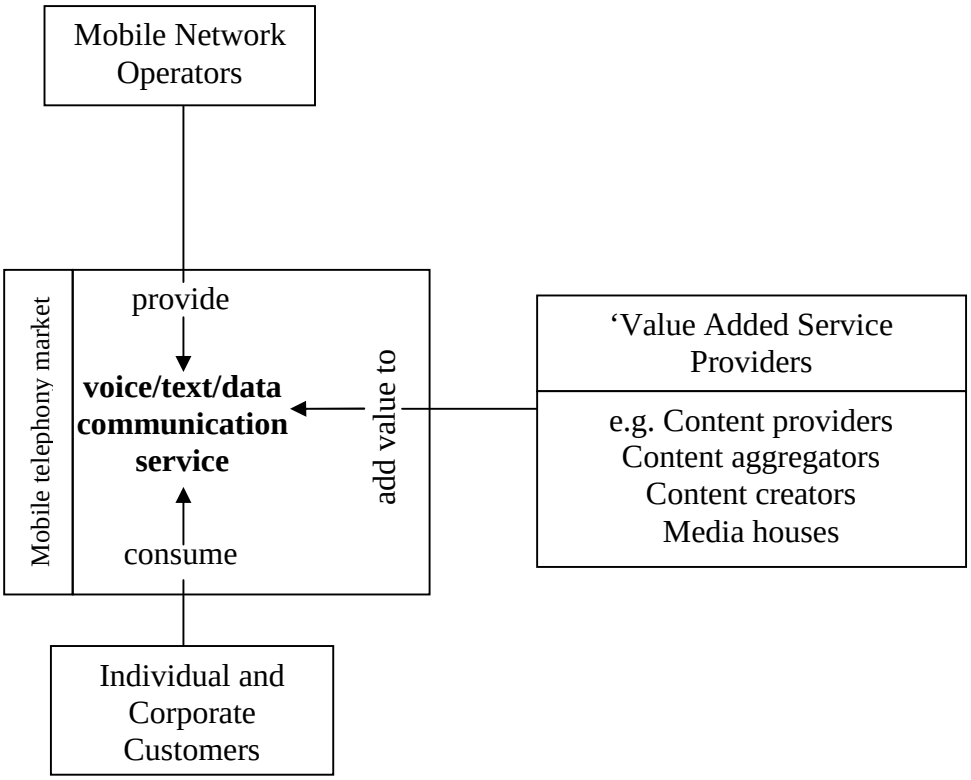
Economic-based institutions include players who influence market dynamics. For instance, the ability for mobile network subscribers to switch from one network to another has an influence on the market share distribution [see Table 5.2.1]. This distribution also has influence on the choice of the network on which to deploy a service. Whilst it may be easier to convince a 'smaller' network like Glo with a new service and to secure a short code, it may take longer to obtain the same short code from MTN or Vodafone. Other market players include competitors who may either be replicating or sometimes offering a better service. It holds that depending on the competitors' aggression, there is potential to lose some market share. The suppliers in this sector vary. Some may be individual programmers, whilst others may be other *smaller* mobile-related businesses who offer specialised services to MVAS providers.

Infrastructural institutions provide the channel on which the content business thrives. For instance, mobile network operators (MNO) provide the connections between subscribers. They also provide the MVAS providers with the mobile short codes that most use for firm-push or customer-pull information. Further, all technologies introduced by MVAS providers into the market need acceptance from the MNO before successful deployment. Other such institutions include utility companies like the Electricity Company of Ghana – which provides electric power without which telecommunication services cannot function at least after a while. Schools and colleges provide the training and skills to meet the human resource requirements content provision. For instance, various universities and polytechnics in the country have various courses in business administration, information technology, computer science engineering, and telecommunication engineering. With control of the country's financial system, they provide the network of finances which MVAS providers can connect to and allow users to for instance make purchases without physical cash.

Overall, it seems that mobile network operators (MNOs) offer the core mobile products i.e. voice, text and data communication service which individual and corporate consumers patronise. This interaction creates a *market*. Over time, voice and data communication become saturated and monolithic – all networks have the same thing without any variation. In addition, subscribers yearn for extra channels on which to use their data connectivity i.e. content. However, since it may not be the MNOs core competence to develop such content, they may either partner with or buy content from third-party firms generally known as *Value Added Service Providers* or simply content providers, content aggregators, content creators.

According to John Torto, Managing Director for Mobile Content.Com, a mobile value-added services provider, sometimes such partnership is with media houses like television and radio stations to run promotions.

Figure 5.4: Stakeholders and Related Roles in Content Creators' Value Chain



Source: Author's Construct

5.3 Summary

This chapter provided an overview of the general context or environment in which mobile content providers operate. Using issues Barnes' (2002) explored for the m-commerce value chain, this chapter discussed infrastructure and services, content and stakeholders involved in providing mobile content. With this sectorial foundation, the next chapter reports events in two mobile content providers in Ghana using longitudinal data. The purpose is to understand the types of m-business capabilities these firms create.

CHAPTER SIX

HOW GHANAIAN MBOs CREATE M-SERVICES

6.1 Introduction

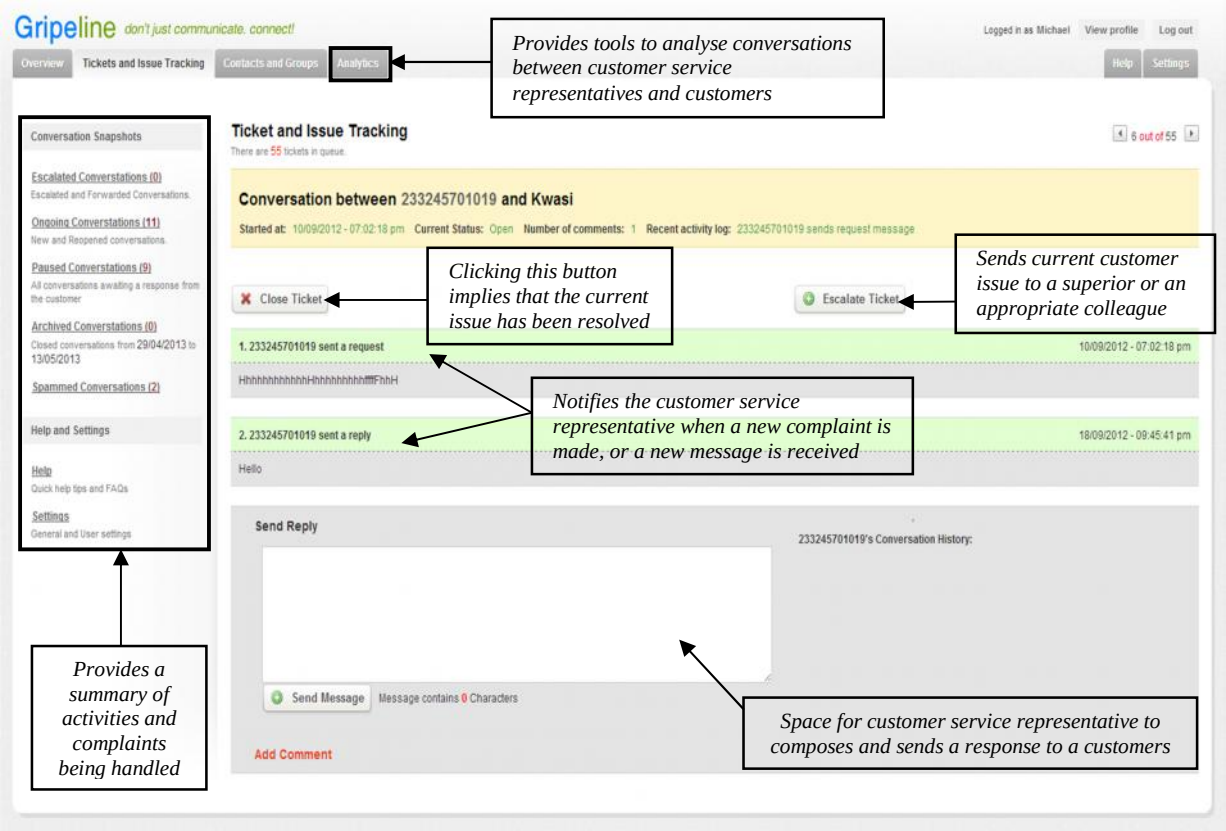
This chapter presents detailed descriptions of how two Ghanaian MBOs create MBOs. The firms are two mobile value-added service providers NandiMobile, and Mobile Content.com. This chapter documents the organisations' histories, their resources and the processes for creating m-services. Further, the cases explore the process of turning around and developing firm resources to create m-business capabilities and the related impact.

6.2 NandiMobile

6.2.1 Nandimobile's m-services

Nandimobile has three main m-services. These are *Gripeline, Infoline,* and the *Business Directory*. Gripeline, Nandimobile's first product, is a web-based Customer Relationship Management (CRM) service, which runs on SMS. Gripeline allows customers to have instant and continuous communication with companies who can also provide instant feedback. This m-service incorporates the advantages of SMS and Nandimobile's advanced technology to connect businesses and customers in the most personal and engaging way. With this service, businesses are able to provide a two-way communication channel for their consumers via mobile i.e. using an online interface, the organisation's representatives can respond to the questions that consumers ask via SMS. The same interface also allows companies to monitor and analyse the content of the messages received.

Figure 6.1: Screenshot of Gripeline



Source: Product Demonstration at NandiMobile

From the description provided, we could describe Gripeline as an m-service which is interactive. In order words, firms can send and receive messages to and from other mobile phone users instantly. Since Gripeline is Nandimobile's service, we could say that this mobile business organisation had an interactional m-business capability to create such an m-service.

Nandimobile's second m-service, *Infoline*, enables businesses to enhance their communication with their consumers. When a business subscribes to Infoline, they receive a short code through which they can send an automated preset feedback to mobile phone users who make enquiries about their products or services. Infoline opens up companies to be reached via mobile i.e. text messages. The service also aggregates and organises customer

messages in a dashboard to provide a regular view of customer needs. Infoline offers some advantages including an affordable and efficient marketing platform which allows companies to do *Keyword Marketing*. This means that companies can include a mobile short code (e.g. 1945) in the advertisements they run on billboards, television, or radio. A keyword is a unique word assigned to a company [who subscribes to Infoline], which consumers can send to the mobile short code to receive an appropriate response. Selorm explained that traditionally, consumers are sometimes unable to catch advertisers' phone numbers from advertisements be it radio, television or billboards. To provide a solution to this challenge, companies can rather subscribe to Infoline to receive a unique *keyword* which would be communicated in the advertisement. In other words, instead of asking consumers to call a ten-digit phone number which they are unable to record, they could rather text a four-letter keyword to a three- or four-figure mobile short code, in order to receive information. In so doing, the advertisers receive information about people who have interest in their product, and perhaps, place follow-up calls [see Figure 6.2.9 for a sample advert with keyword and mobile short code]. Edward advises that, such a system

"...is very useful because, when the company is running a promotion, it can send notifications directly to people who have previously shown interest in their product/service".

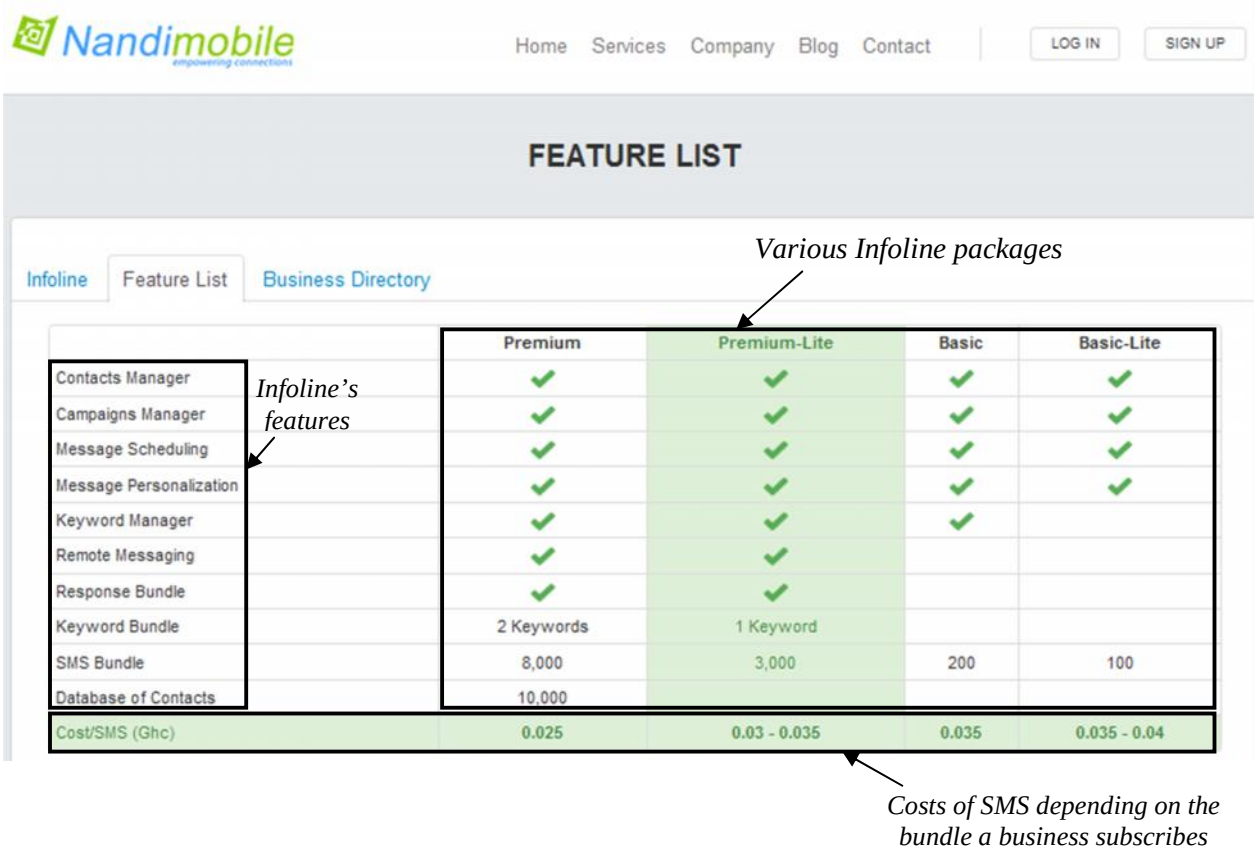
Moreover, Infoline allows the creation of multiple keywords for companies that advertise through different channels e.g. print media, and electronic media. Using multiple keywords affords such companies to track the performance of the each of the different media through which the advertisements go. Infoline also allows companies to send SMS messages in bulk to many individuals at the same time and at competitive rates. Such messages could either be scheduled or sent immediately. The product also comes with a 'performance checker' known as 'Analytics'. On the product dashboard, a company can tell how many messages it has sent out over a period, how many responses it received per campaign, billing information, and the

performance of company keywords. Information in the Analytics could be used to generate graphs, which companies can use to easily spot trends and areas for improvement. All these features are accessible over the Internet. According to Belinda,

"*A company needs just a computer with Internet access. Others prefer to use smart phones*".

Customers have four different packages of Infoline to choose from (See Figure 6.2.2 for features of the different package types). Nandimobile assigns subscribing companies with a username and password to log into via the Internet to access Infoline's dashboard and features.

Figure 6.2: Package Type and Related Features

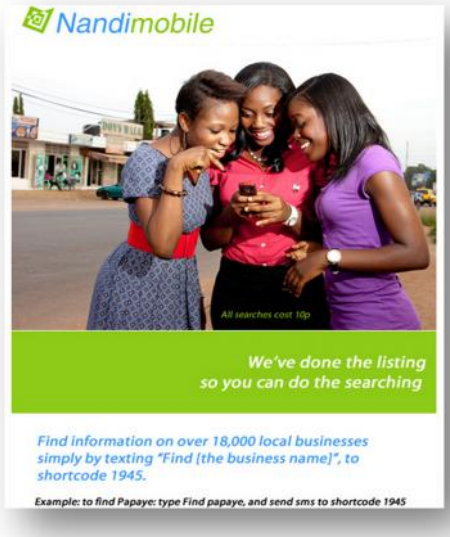


Source: (Nandimobile, 2013)

From the description provided, we could describe Infoline as an m-service which is informational. In order words, business that subscribe to Infoline are able to send messages to their customers e.g. informing them about a promotion. They do not receive feedback from the recipients. Since Infoline is Nandimobile's service, we could say that this mobile business organisation had an informational m-business capability to create such an m-service.

Nandimobile has a third m-service called the *Business Directory*. This m-service enables mobile users to search through a list of business via SMS using their mobile phones. The directory's system returns results containing the business name, contact details, business address and the services delivered by the business the consumer searched.

Figure 6.3: NandiMobile Business Directory Flier



If the directory contains more than one entry with the name searched, up to five results are delivered for the user's convenience at no extra cost. The service offers an avenue for Ghanaian companies to list and make its information available to over fifteen million mobile phone users in Ghana. With over 90,000 listings, the business directory aims to be the first option for mobile users seeking information about businesses in Ghana. The service runs across all networks in Ghana and costs *ten Ghana pesewas (10p)* per search. To access the service, a user sends **FIND [Name of Company] to short code 1945**. The results are delivered to the users' handset. Unlisted businesses can enter their information into the directory by registering on the NandiMobile website. Someone from NandiMobile audits and

adds the information to the business directory. If any company information is unfound, there is an option to go online and add that company's information.

Since information from the business directory is only accessible upon a query, we can say that this service is interactional; hence, Nandimobile used their interactional m-business capability to create it.

Infoline and Gripeline were novel at the time of inception and launch. However, several content providers have similar offerings. Nevertheless, what makes Nandimobile's offer unique is the ability to combine their competitors' m-services. For instance, some value added service providers separately i) offer bulk SMS services to their clients e.g. Rancard Solutions ii) provide business directory services e.g. Business Ghana and iii) provide mobile short code for consumers to interact with businesses e.g. SMS Ghana. However, Edward touts,

"*NandiMobile is the only company that has identified these three things as essential to the consumer, and put all in one basket. So from one application, you can chat, you can search through 90,000 businesses for their contact information. Thus, depending on which part of our business model you look at, you will have one company doing that, but not doing all three*".

In summary, we have seen from the descriptions of the three m-services that Nandimobile has two main m-business capabilities i.e. informational, and interactional.

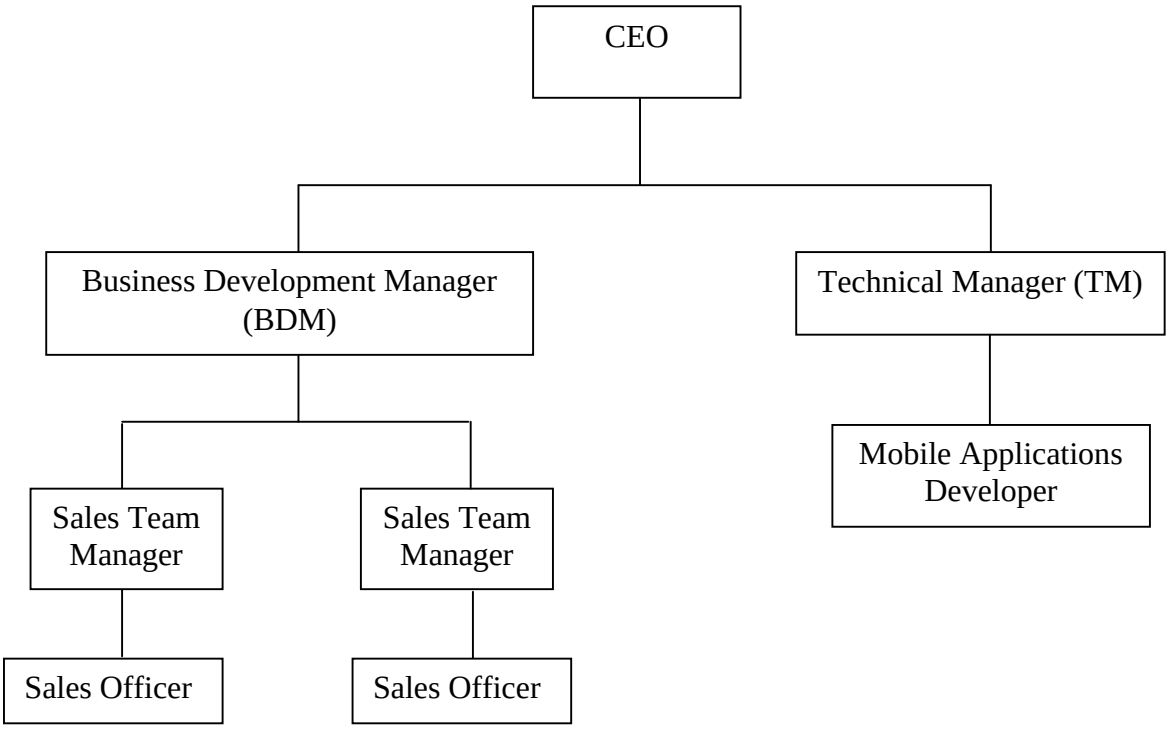
6.2.2 Firm History and Profile

Nandimobile is a product of the Meltwater Entrepreneurial School of Technology's (MEST) two-year training programme. The MEST programme is a fully sponsored trainee program for young tertiary graduates with a focus on software development and entrepreneurship (Meltwater, 2012). MEST supports trainees to create their own software companies and thereby creating wealth locally in Ghana. Every year, MEST recruits trainees with diverse academic backgrounds like computer science, engineering, business and other social sciences. MEST takes them through a rigorous, two-year training program, after which trainees with viable business ideas move into the MEST Incubator for assistance in getting their businesses off the ground. The Meltwater Foundation and its networks of experienced mentors and advisors also provide mentorship for the companies that make it out the incubator (Meltwater, 2012).

Anne Amuzu, Edward Tagoe, and Michael Dakwa, co-founders of Nandimobile graduated from MEST in May/June 2010, and are currently housed in the Incubator in East Legon, Accra. The three co-founders hold first degrees in Computer Engineering, Psychology and Building Technology, respectively. Nandimobile team received funding after MEST adjudged Gripeline as interesting, viable, and replicable across countries. After the acceptance, Anne and his mates formed Nandimobile, incorporated on 26 June 2010. They received an undisclosed initial amount from the MEST. According to MEST, the funding normally between $30,000 and $300,000 is for a minority equity stake in start-ups like Nandimobile, and to enable the new companies produce a commercially viable solution and generate initial revenue. Other facilities provided to start-ups include office space, access to a network of advisors/mentors, and hands-on assistance in business aspects from incubator staff. Nandimobile, a *Value Added Service Provider*, clocked its third year in June 2013. Having started with three (3) core members, the company now has staff strength of eight (8).

This number includes Anne, the Chief Executive Officer, Edward, the Business Development Manager, and Michael, the Technical Manager. Others are Joseph, a mobile applications developer who reports to Michael; two Sales Team Managers, Selorm and Belinda who report to Edward. Each Sales Team Manager also has one Sales Officer. Whilst Selorm holds a first degree in Marketing, Berlinda holds a first degree in Human Biology, with a passion for sales.

Figure 6.4: NandiMobile's Staff Structure



Source: Field Interviews with NandiMobile Co-Founders

Several businesses from various industries like automobile, body care and beauty, and education use Nandimobile's m-services industries (see Table 6.1).

Table 6.1 : Sample Institutions using NandiMobile's Products

	Business Name	**Type of Business / Industry**	**Product Being Used by Business**
1.	Forever Claire (FC) Group of Companies	Beauty care, cosmetics	Gripeline Infoline
2.	ACCA Global, Ghana Office	Professional education	Infoline
3.	Pentecost Church Head Office	Religious	Infoline
4.	Vaniado	Home care / sanitary	Infoline
5.	Preparation for Life (PFL)	Education	Infoline
6.	Starbow	Aviation	Infoline
7.	Multimedia Group (MyJoyOnline)	Media and Communication	Infoline
8.	International Central Gospel Church (East Legon Branch)	Religious	Infoline
9.	China Europe International Business School (CEIBS)	Education	Infoline
10.	Toyota Ghana Limited	Automobile	Infoline

Source: Interviews with Business Development Manager and Sales Team Manager

NandiMobile's m-services, especially Gripeline, has received several local and international awards. For instance, during the Launch Conference in February 2011, panellists adjudged Gripeline as the best m-service, for its ability to connect businesses with their customers (See Figure 6.5 for award). Anne reckons that

"NandiMobile was given the award because of Gripeline's international replicability. Customer service is practiced everywhere, and so a solution like that would be useful anywhere".

Figure 6.5: Launch Conference Award given to NandiMobile

Source: Artefact examination during Field Visit

The company's growing worldwide reputation has culminated in several speaking engagements (allAfrica, 2012), and interviews (The NextWomen, 2013). For instance, recently Anne received an invitation to join a handful of African women entrepreneurs to interact with Fortune's Most Powerful Women Leaders to share their time, talent and expertise in business and leadership (US Embassy, 2013; enewsgh.com, 2013).

Nandimobile's activities over the three years has seen the MBO breaking even and not needing any more funding from MEST (see Table 6.2 for the company's financial profile).

Michael shares that "*Nandimobile has been running on its own funds for more than a year now and have not received any round of funding [from MEST]*".

Table 6.2: NandiMobile's Financial Profile

	2010	2011	2012	May 2013
Net Profit After Tax (both Infoline and Gripeline) in Ghana Cedis	-	-	41,866	Not given to author
Number of Infoline Subscribers	4	24	66	49[1]
Number of Gripeline Subscribers	2	-	-	1
Number of Employees	3	5	7	8

Source: Email Correspondence with Business Development Manager

Edward reveals that, "*Nandimobile broke even in the middle of last year (2012), and started making profits (thereon)*". "*In general, the ICT industry in Ghana is profitable depending on whether you focus on a need that can be satisfied with your product or service*", the BDM adds.

Nandimobile's profile suggests the existence of some information system (IS) resources including IS technical skills and IS development. The MBO has resources like the Technical manager and mobile applications developer. The company is also engaged in the creation of mobile services (m-services) like Infoline and Gripeline. Therefore, there is the presence of IS technical skills and IS development respectively.

6.2.3 A Learning Experience

Tigo, the third largest mobile network operator in Ghana (see Table 5.1) approached NandiMobile in July 2010 to sign up for a pilot test of Gripeline. Specifically, Tigo wanted to use Gripeline for customer service and support of Tigo Cash – the mobile money arm of

[1] The number of Infoline subscribers depends on the number of businesses that have an active SMS bundle subscription. As at May 2013, 49 subscribers had renewed their subscription.

TiGo. According to the concept document Nandimobile drafted for Tigo, the project was for an SMS-based customer support application for use by the Tigo Cash customer support call centre agents. Traditionally, customers have to dial continuously in an attempt to establish a connection to a customer service agent of mobile network operators like Tigo. Sometimes, people wait a long while before receiving service. Gripeline was to be a solution to customers' frustration, by providing an alternative channel for customer support. According to Edward,

"*Tigo wanted it not as replacement for their voice-based call centre, but as an alternative. They wanted to start with the Tigo Cash, and if it goes well, they roll it out to all services*".

Even though the initial concept was what attracted Tigo, the design did not fully meet their needs. The initial design simply enabled back-and-forth real-time communication between a company and its customers via short messaging service (SMS). Tigo, wanted something more than that. The seeming deficiency of the original Gripeline to meet Tigo's need was because of inexperience with customer call centres.

To make up for it, Tigo invited Nandimobile's team to study the processes of their call centre in Accra. Edward concedes that,

"They took us to their outsourced customer service unit where we sat down with the customer service agents, and we understood what went on there. It solidified my assumptions and we had to throw away some"

The Tigo exposure resulted in a massive expansion of the Gripeline's features. For instance, Nandimobile added the following features

- Trouble Ticket System: this feature tracks the detection, reporting and resolution of customer complaints, by allocating numbered tickets.

- Automated Ticket Distribution System: this feature automatically distributes queued tickets to customer service agents logged in at the time the ticket is generated. The distribution is done according to company choice i.e. whether a ticket should be assigned equitably or to the next free agent, no matter how many complaints he/she has dealt with.
- Escalation Manager: this feature enables an agent to transfer a complaint to either a superior or a colleague who can deal with it better.
- Reports & Analytics Manager: this feature generates metrics for measuring the performance of customer service agents.
- Knowledgebase Manager: this feature manages information resources that customer service agents can use to provide responses to customers.

Tigo made two more requests. The first was for an analytics feature that enables the identification of the most prevalent word(s) in customer complaint messages. This is similar to identifying 'trending' words in the online micro-blogging platform, Twitter. Second, Tigo wanted a service which did not require the customer to pay – to access customer support via SMS. *"They wanted a toll-free version of the application"*, Edward remembers. However, Nandimobile advised against that because "*...it will encourage spamming"*, he added.

Unfortunately, all the tweaking, redevelopment and enhancement Nandimobile did to Gripeline came to naught. In other words, the project was not implemented because, Tigo Cash's General Manager, Mr. Khuen How Ng, who was spearheading the project at the time, was reassigned to another Tigo country office. Whilst Khuen's successor did not seem enthused about the project his predecessor started, there was not much documentation either – apart from the initial and revised concept documents. At best, Khuen's successor asked that the entire process restarted.

Nandimobile depended on the relationship previously built with Tigo Cash's Technical Specialist, and Mr. Khuen's aide, Ebo Jackson to make some progress in getting the project back on track. The effort did not go far either as Ebo left Tigo to join a rival mobile network operator, Vodafone. Further, as per Tigo company regulations, it was unethical and unacceptable for anyone to contact past (Tigo) employees about business done with them when they worked there. The gravest source of worry was the lack of documentation about the stages and actions taken about the project when Mr. Ng was in charge. This project had to be forgone.

"*That was our first pilot, so we learnt a lot from it. That is how come we know about escalation –it was a way to know and understand the industry*", Edward shares contentment.

In summary, we could see that in addition to Nandimobile's existing IS resources – IS technical skills and IS development, the MBO gained another resource i.e. managing external resources (Wade & Hulland, 2004). This resource lies in the MBO's relationship with key personnel at Tigo Cash during the initial phases of the proposed project. Further, even though the Tigo project did not come off, we could observe that learning took place. It is worth noticing learning because it is a key aspect of the dynamic capability development process in any organisation. For instance, the learning experience informed the redesign of Gripeline, which in itself is aspect of the capability development process – recombination.

6.2.4 Near Success

Exit Tigo, enter the Centre for Gender Studies and Advocacy (CEGENSA). Whilst Tigo was Nandimobile's first non-paying customer, CEGENSA, a gender rights advocacy centre based

at the University of Ghana – became the first paying customer. The Centre was executing a project funded by the ARK Foundation; and wanted a platform over which students could report incidents of sexual abuse. One of the CEGENSA staff members had recommended NandiMobile's service. The Centre's readiness sped up the process of creating the first Infoline account. However, after setting up the product and agreeing on terms of use, the project did not take off. Edward recalls that,

"*For some reason they never launched, but they paid for the software (Infoline). They said it got some diplomatic barriers; whoever had to approve were male lecturers and they thought it was...*"

This event in Nandimobile's lifecycle is an example of how activities within the environment or ecosystem can affect the success or otherwise of an MBO's activities. In addition, this event and the Tigo experience suggests the importance of readiness on the part of all necessary stakeholders for the success of MBOs' activities.

6.2.5 Reconfiguring Existing Capabilities

Some months after the CEGENSA experience in 2011, Edward doubling as Sales Manager at the time Nandimobile prospected for the next client, the Association of Certified Chartered Accountants (ACCA, Ghana). He explained to them what Infoline could help them do. Nandimobile's ability to spot a specific need that their application could satisfy was a basis for ACCA signing on; ACCA needed to send notifications to their members and examination candidates via their mobile phones. Over the period when ACCA used Infoline, it requested for some extra features. They wanted to be able to send precomposed messages with varying placeholders to different people at the same time.

"*This is known in industry parlance as tagging*", Edward educates.

Thus, for instance, if 50 new candidates register with ACCA, messages would be sent to all 50. These messages even though will have the same structure, the student name, account number, and examination date would vary. Similarly, a doctor would also need tagging to send different appointment times to different patients. The tagging feature makes it possible for the Infoline application to select the variable part of a message from a Microsoft Excel sheet created by the sending institution like ACCA. Since, this feature was not originally in Infoline, the application had to be modified to satisfy ACCA. Edward acknowledges it was important to satisfy their need and win their custom because ACCA sent many messages, and thus generated income for Nandimobile. Within ACCA's request, Nandimobile also saw an opportunity of making recipients feel special, to increase personalisation, and go beyond making just the name distinct, depending on the client's preferences. Since we implemented tagging in June 2012, it has been very helpful, especially for ACCA. For Nandimobile, ACCA's satisfaction ensured continuous use, and custom. Edward appreciates that

"*They (ACCA) are (still) our customers and they use our software very well"*.

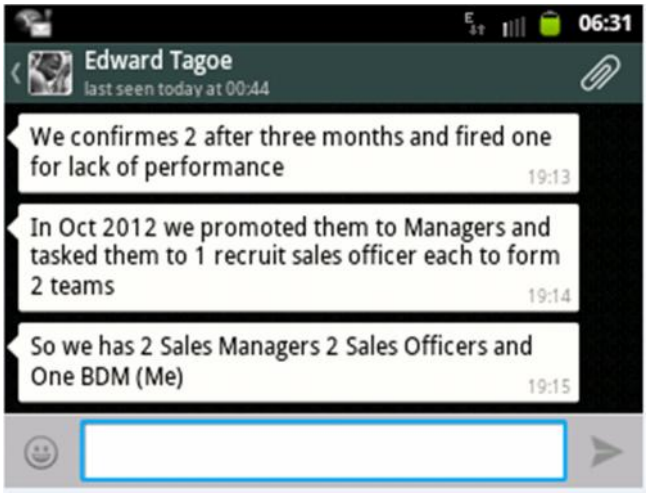
Interestingly, cursory scans and reviews of companies that offer Infoline-like applications do not have tagging. For instance, SMS Ghana does not have tagging in their bulk SMS service, Edward assures.

The ACCA experience suggests the need for MBOs to align m-services to client needs to ensure client satisfaction.

6.2.6 Founding new Resources and Retiring Capabilities

After securing the ACCA deal, the three co-founders saw the need to expand Nandimobile's sales activities. As Edward intimates, Nandimobile recruited three sales officers.

Figure 6.6: Recruitment of Sales Managers



Source: Mobile Chat with Nandimobile BDM and Co-founder, Edward Tagoe

The purpose of brining on the sales officers was to build a sales team for the mobile service. After three months, two were confirmed, whilst one was fired for lack of performance. In October 2012, management promoted the two hired sales officers to Sales Manager positions. They were to recruit one sales officer each to form two sales teams. Both sales teams were to report to Edward, the Business Development Manager. In April 2013, one of the (confirmed) sales managers resigned. Actually, he left Nandimobile for another company apparently a competitor.

The decision to build a sales team is congruent with the tenets of the founding stage within the capability development lifecycle. At the stage, a firm identifies a need to acquire a resource. In addition, asking the confirmed and promoted sales managers to recruit two more sales officers suggests a revisit to the founding stage.

6.2.7 Developing New Resources

The newly formed sales team adopted a proactive approach in prospecting for new clients, with a focus on corporate institutions. The strategy was to target business because it was a bit difficult to get individual customers to use the current applications apart from the business directory. Anne explains that

"*...the companies use the web application, they are our main target. We target the companies to target their customers; we don't target the customers directly, at least as at now*".

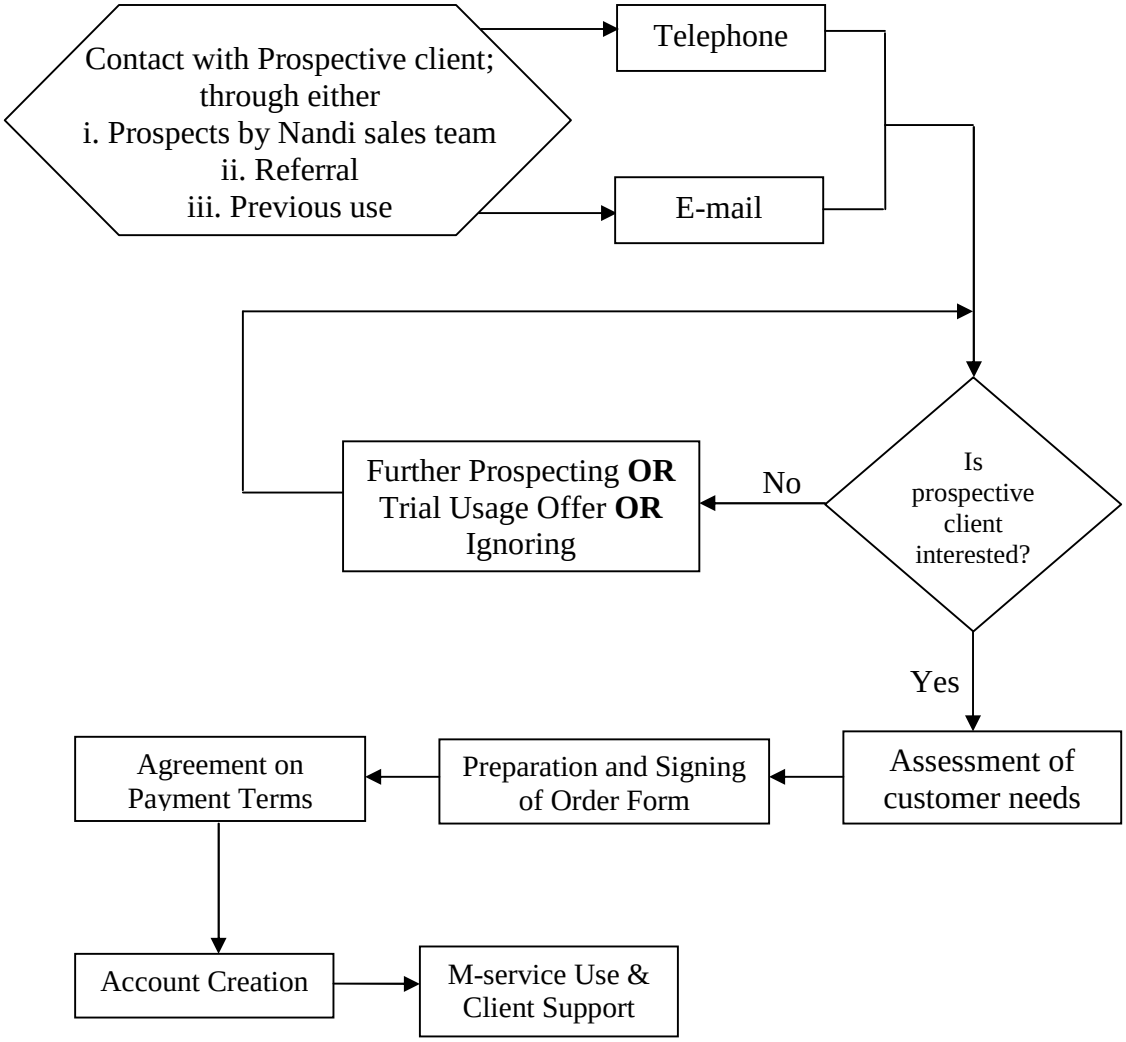
To this end, the sales team identifies possible companies that may have need for Nandimobile's m-services. The normal targets are those institutions with large customer bases like schools and churches who have students and congregation respectively. The team scans through Nandimobile's business directory for the contact information of potential businesses, and makes initial contact via a phone call. A team member explains the purpose of the m-service to the business, and arrange for a possible product demonstration. Selorm, the (remaining) Sales manager intimates that

"It is during the demonstration that they see how it works and get the full understanding of what it does".

Sometimes, the demonstrations do not lead to immediate acceptance of and subscription to the m-service. Nevertheless, apart from the phone contact, and demonstration, other businesses contact Nandimobile based on referrals from existing clients or as follow-ups to previous contacts. When a client finally expresses interest in using the m-service, the sales team assesses their particular need and creates a one-month trial account for that business (see Figure 6.8 for an illustration of the process of subscribing to Nandimobile m-service). After the trial, the business can choose to subscribe to one of the full packages (see Figure 6.2).

A field trip with a three-member sales team (made up of a driver, Selorm, and Berlinda) revealed that the team constantly looks out for possible clients by taking notice of billboards, signposts and buildings for contact information. Sometimes a team member places a reconnaissance call while on the journey. Other times, the contact information is saved for later pursuit.

Figure 6.7: The Process of Subscribing to a NandiMobile Service



Source: Author's construct based on conversations with Sales Team

Nandimobile's proactive nature led to reaching a deal with FC Beauty Klinik, hereinafter referred to as FC. It was not very easy and smooth clinching that deal. It began with a phone call to the customer service desk at FC, to give a vivid description of the products and how they could be used in FCBK's operations. Selorm recalls,

"*the customer service representative was not very enthused, but promised to forward the information to the CEO*".

FC's CEO called back after about thirty minute asking for a demonstration of the m-services' features and functionalities. The sales team quickly drover over to meet Grace, the CEO for a product demonstration. Even though she seemed fascinated with the products, she was quite diffident about the specific benefits the products held for her business, because she was already her clients using fixed telephone lines. How then could the sales team make the product look more beneficial to FC, Selorm reminisces asking himself and his team. It took a careful study of FC's operations to prepare a detailed training programme and manual specific for their needs. The study seems perpetual because FC keeps introducing new products and new units. The negotiations and constant support Nandimobile provided, yielded in FC's subscription to both Infoline and Gripeline. Whilst the cosmetic and beauty firm uses Infoline to send marketing messages via SMS to clients' mobile phones, it uses Gripeline to chat with customers towards solving their complaints. Two issues cropped up especially from the use of Gripeline. Over time, it seemed that Gripeline lost its relevance to FC. Selorm concedes that...

"*If you report a skin issue for instance, the first thing they have to tell you is to come to the clinic. Hence, they did not need a dedicated person to man Gripeline as the system's concept required.*"

6.2.8 Capability Retirement

This observation of Gripeline's seeming irrelevance to FC caused the Nandimobile to focus on support just Infoline for the beauty company. Selorm adds that, "*Gripeline was not relevant (to FC), so we changed, and focused on Infoline*". Currently, Nandimobile still provides support for Infoline at FC to encourage the use of the application. For instance, Nandimobile advised the CEO to add their keyword (i.e. FCBK) and shortcode (i.e. 1945) to

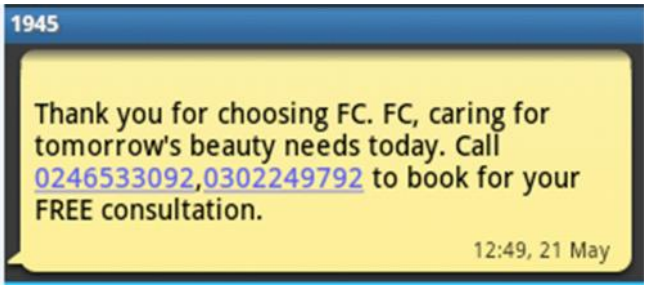
all their advertisement channels. FC adhered. They advertise their keyword and short code in a coloured full-page advertisement they place in a weekend newspaper, the Mirror, regularly (see Figure 6.9).

Figure 6.8: Sample FC Advert with Keyword and Short Code

Source: The Mirror newspaper | 18 May, 2013 pg 9

Following the newspaper advert by texting *Grace* and a question to 1945 or by sending *FCBK* to the same short code, one receives a message with contact numbers to call to book a free consultation (see Figure 6.10).

Figure 6.9: Sample Response from Texting FC's Keyword to 1945



Source: Infoline m-service Test by Author

Nandimobile's discontinuance of Gripeline at FC suggests retirement, which is one of the six possible paths which a firm's capability can take. It is retirement because, the capability seems to be discarded.

6.2.9 Capability Renewal

Apart from Nandimobile's proactive approach to increase its client base, sometimes other organisations contact the MBO with contracts. One such contract came from the British Council (BC) in October, 2012. Nandimobile received an e-mail from BC's Project Delivery Support office requesting a proposal to develop and implement an automated SMS information querying system for an education fair. The fair dubbed 'The *Education UK* Exhibition in Ghana' is a gathering of over thirty UK universities and colleges where mostly Ghanaian students and young professionals come to seek study and training opportunities.

BC expected Nandimobile or any of the other two companies invited to present a proposal to design, develop and implement an m-service which has

i. a corporate bulk SMS system,
ii. a live SMS customer information querying system via short code to which participants can text across all networks,

iii. a database that British Council could monitor at any time.

Nandimobile's Infoline formed a solid foundation to deliver the application that British Council (BC) requested. However, the specific requirements called for some new features. Edward recalls that, "*British Council was very particular about our ability to provide them with hourly updates on the number of people who had actually turned up for the exhibition*".

Apparently, Nandimobile won the contract because the other bidders were unable to add the functionality to provide hourly updates. This feature called for the development of a database that BC could monitor at any time. With dedication from Nandimobile staff, this was added easily. In January, 2013, the Nandimobile demonstrated the m-service to BC, and receive selection notification to implement the service in February, 2013. The successful execution of the m-service for BC made it possible to design and sell a similar product to PFL, another institution that organises educational programs and university recruitment to Australian and some UK-based universities and colleges.

From the m-service provided to the British Council, we see that Nandimobile did not have that specific service already available. However, the MBO's existing m-service i.e. Infoline went through a new development stage to modify it to suit a new situation i.e. British Council's need. This suggests renewal of the ability to create Infoline – which was renewed to meet a new need.

6.2.10 Resource Reconfiguration

At certain times within the company, there is reduced need for technical activity. This means that there is not much need for programming and development activities. For instance, since

between April and June 2013 there was no product development activity. Whilst the technical team was doing routine maintenance for existing services, the rest of the staff was concentrating on sales. Michael who is part of the technical team and in charge of designing user experience shared that

"*..product development is redundant now. I was leading product development side of things, which means concepts, definition of product goals, and product synergy. Now I think we've achieved that. I am not really active in the company now, I am only working at the director level. When there is need for* [product] *development, I come down from director to help out*".

This is not a single occurrence. We recall that in the early days of the company, Edward served as both Business Development Manager and Sales Manager until the firm formed a dedicated sales team. Similarly, Michael moves between roles as a director and a member of the product development team. This suggests resource reconfiguration when circumstances require it.

6.2.11 Challenges

Nandimobile's business journey has not been all-smooth. Anne, mentions that in the beginning, the major challenge was to get people to understand the concept and to accept the software as it was. She explains that using Nandimobile's m-services involved people changing the way they do things. For instance, a firm agreeing to, and subscribing to use Infoline means that they have to give up previous means of contacting their clients e.g. voice calls via fixed or mobile phones, and rather use text messaging.

"*So in the beginning it was more of getting people to understand the value of the software and accepting it as it is*", she adds.

The MBO faced another challenge in 'aligning' the firm's m-services to the specific needs of prospective customer. This is evident from the FC scenario that even though the concept fo the m-service is novel and perceived useful, its final acceptance rests on the client. To go around this challenge, Selorm, shares that Nandimobile trains the customers to ensure proper orientation about the m-service's usefulness.

"This is mainly to help them accommodate and accept the new way of undertaking their business activities", he adds.

Whilst this challenge may be specific for Infoline, there were some challenges for Gripeline. Selorm, concedes that the application is very good in concept and on paper, but has some implementation challenges. Edward succinctly agrees that first, Gripeline is more customer service focused. Most companies have a bigger budget for marketing, so they would rather invest in attracting new customers instead of retaining those they already have. He observes that

"Ghanaians would not leave anyway. Therefore, it is easier to convince someone to invest in a marketing tool like Infoline, than a customer service product like Gripeline".

Second, businesses that subscribe to Gripeline need to employ someone to respond to and manage the conversations that originate from customers' phones. This is unlike Infoline where the business knows when to send and expect information to and from clients respectively. Therefore, if the business does not have someone who can do this, they have to employ someone.

"So first of all they don't want to invest, and now after investing in the software, they have to invest in another person?"

We see evidence of this challenge in FC Beauty Klinik discontinuing the use of Gripeline. Selorm admits that Nandimobile...

"*...barely sells Gripeline now. It has even lost some relevance for FC which bought it early on, so we are now focusing on Infoline*".

In addition, even though Nandimobile's products could be useful in government institutions, Edward describes the perceived difficulty in getting a government institution to use an m-service. He cites Nandimobile's age as a possible hindrance in getting their service accepted. Therefore, with the limited resources available, they would rather concentrate on winning contracts to provide more and more services for non-governmental institutions instead of governmental ones. This would be the focus until a time when the company can afford to pursue some government contracts.

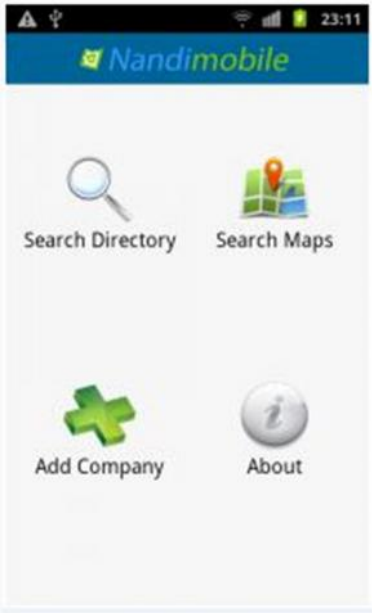
"*It would pay to the get our m-service there, but we don't have the manpower to focus on them yet*", he comments.

From the above challenging scenarios suggest some difficulty in getting businesses to use Gripeline because of the need for some investments into human resources and equipment, without which Gripeline cannot work. This suggests the need for readiness of the business to adopt an m-service. Thus even though Nandimobile is ready, the unready state of a business hampers the uptake of an m-service. In addition, Nandimobile's decision to focus on private businesses, and postpone prospecting for government contracts is suggestive of possibly low strategic political management i.e. the strategic actions which a firm plans for and enacts for the purpose of achieving maximum economic returns from its political environment (Oliver & Holzinger, 2008).

6.2.12 Current and Future Projects

During the first two years, Nandimobile has focused on and targeted on improving the first two m-services i.e. doing more of the marketing messages and enquiries (where consumers and businesses can chat). In 2013, the focus is more on the business directory. Edward admits how there has not been much attention on the business directory until March 2013. The company promises new entries in the directory. There would be an app version of the business directory too (see Figure 6.10 for the beta version).

Figure 6.10: NandiMobile app beta version



Source: Google Play Store (March, 2013)

One main reason for developing the *app* version of their m-services is that the firm is looking into the future. "*We are just looking into the future; we can't do SMS forever. Two or three years down the line, SMS might be dying or might be dead*", Michael discloses.

Even though the apps are under development, the company does not intend to discard the SMS version any time soon. Rather, management hopes to remain relevant with the types of m-services delivered; whether SMS-based or app-based.

In looking into the future towards the development of app-based m-services, Nandimobile recruited a new developer, Joseph, to shore up the technical team specifically in the development of Nandimobile *Connect* [see Figure 6.10]. According to Michael, "*Joseph joined Nandimobile to do backend coding for the app*".

Joseph's introduction into Nandimobile's technical team suggests that the firm found itself at the founding stage of resource development. There was the need for app development skills.

Thus, Joseph was recruited. Further, this new resource has already begun working, developing apps. This observation also suggests how existing members of the technical team and non-technical team are working together with him suggests *coordination*. Continuous development of m-services for Nandimobile amounts in learning until it generates a new *m-business capability* which becomes part of the firm. Management's decision and support for looking into the future to develop app-based m-services suggests strategic intent. This is a new direction management wants to move the company; and the resources to achieve this could be acquired – i.e. they are *gettable* e.g. app-development skill.

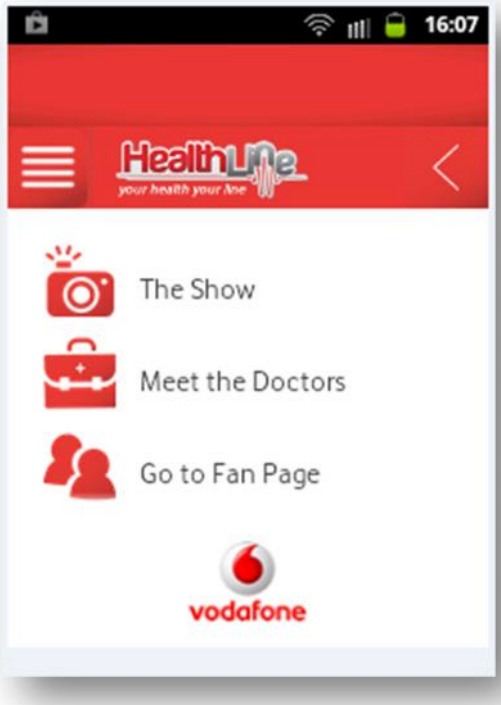
Joseph also hints that in addition to the app, Nandimobile is working on a mobile web version of the business directory to cater for Internet-ready non-smart phones because the MBO perceives a majority of mobile phone users this type of phones. These projects have the potential to diversify the firm's initial focus on businesses only. Anne indicates that "*we might now target the (individual) customers with the mobile apps we are rolling out*".

In March 2013, Nandimobile displayed the beta version of the app (See Figure 6.10) during a national blogging conference called BlogCamp. During the conference, Nandimobile registered and directed people to download and test the NandiMobile app. Within six weeks, Nandimobile released a newer version of the app (yet to feature on Google Play Store). Whilst the beta version could only i) search for an already listed company ii) search for directions to listed companies' locations, and iii) allow mobile users to add a company to the directory,

"*the new version is extended such that if customers search for and find a company, they could go further to initiate a chat, if that company subscribes to our Infoline*", Edward explains.

The main reason for this extension is the realisation that the use of Gripeline would be incrementally costly to mobile users. They may have to pay (i.e. 10p per message) for sending several messages before an issue is resolved. Therefore using the app is intended to reduce this cost because there is no short code.

Figure 6.11: NandiMobile *Connect* Branded for Vodafone Foundation's *Healthline*



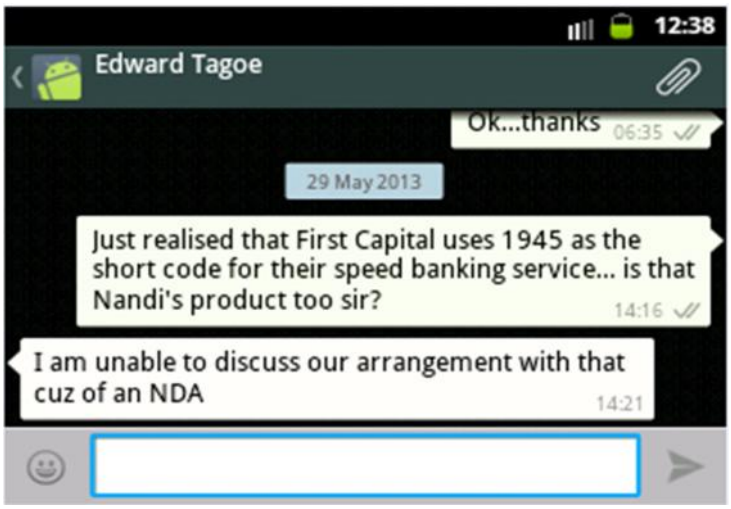
Source: Google Play Store

Interestingly, this new feature has drawn attention from the country's second largest mobile network operator, Vodafone. The network has a non-governmental organisation called Vodafone Foundation, which has requested Nandimobile to brand *Connect* for the foundation's public health education initiative called *Healthline* (see Figure 6.11).

Within the decision to bring back Gripeline from retirement to merge with the app version of the business directory, we see another renewal of the capability which Nandimobile used to create Gripeline. The ability to execute the Vodafone request also suggests Nandimobile's ability to meet client needs; ability demonstrated in the British Council project. The feat also suggests strategic direction; management decided to follow up and execute the Vodafone request. This was enabled by use of current firm resources, which we could describe as *gettable* – apart from medical information which needs to be loaded into the app, Nandimobile already had the needed resources available to make the necessary changes.

During the course of gathering data for this case study, the study observed that a financial institution, First Capital Plus, was using Nandimobile's mobile short code i.e. 1945. However, management declined to comment on the details of that m-service due to a non-disclosure agreement between the two firms (See Figure 6.12).

Figure 6.12: First Capital Plus' use of Nandimobile's short code for Speedbanking



Source: Chat with Nandimobile co-founder

The *Speedbanking* service allows the bank's customers to top-up their accounts using a scratch card. The bank's customer buys a scratch card with the desired amount, scratches it, and sends the revealed number to a short code i.e. 1945 (see Figure 6.13).

Figure 6.13: First Capital Plus' *Speedbanking* m-Service

Source: First Capital Bank *Speedbanking* flier

The ability to create this m-service for First Capital Plus suggests a transactional capability; toppinng up a bank account via mobile could be regarded as a transaction. Even though Nandimobile would not comment on the m-service we could suggest that there was some modification of its existing m-service especially Infoline to create the Speedbanking service. This possibility also suggests a renewal of existing resources to suit a new situation.

Furthermore, Edward's sustained belief in the viability of Gripeline informs a strategy aimed at making the m-service still useful. In short, it would be merged with Infoline. Businesses subscribing to Infoline need to request for it though. *"Therefore, if you buy Infoline, you are actually buying [Infoline] with or without Gripeline. We are still on the merger"* he educates.

Michael agrees that the two m-services can and should be merged. He thinks that The merger will give a human face to the messages that businesses send to customers. In fact, the merger

is extending to all Nandimobile's m-services. "*Everything is coming together";* Michael shares.

This is in the sense that in addition to the business directory app (i.e.Nandimobile Connect) providing the user with information about businesses, the app can also enable the user to send instant messages to those businesses who are using Infoline. A company's position in search results would however be determined by their Infoline subscription status such that

"*when you do a generic search for, say, food joints, the results will display those who are Infoline subscribers first. It will be an ecosystem controlled by us. Thus even though you download the app for business information, we give you more*", Michael assures.

Nandimobile management's intention to merge their m-services suggests strategic direction. The firm realises some opportunity of which it can take advantage. To this end, it is combining existing m-services. This combination suggests a reconfiguration of resources. Currently, Nandimobile is displaying the capability to develop and experiment with app development which are new forms of mobile technologies. This suggests the presence of *IS development* in the MBO (see Figure 3.2). Overall, we see different resources, existing and newly acquired, coming together to help achieve firm goals.

6.3 Mobile Content.Com (MCC)

6.3.1 MCC's Key m-services

MCC identifies existing day-to-day activities that mobile users perform, or services which government and private institutions render to consumers so that new and innovative mobile

services which help achieve those tasks. Other times, these individuals and institutions rather consult MCC to create m-services or content at a fee. Either way, MCC categorises the resultant m-services as Music and Entertainment; Sport information; Chat and Dating; Informative; Interactive Multimedia and TV; Religion and Motivational; Financial and m-Commerce; M-Transact; and Mobile Marketing.

MCC's Value Added Services (VAS) Manager, Johnny Abdallah further explains that MCC has a myriad of m-services. He categorises them into "*one-off, continuous or recurring, and day-to-day services*". He further explains that one-off services are those m-services, which the MBO creates, launches and runs for just about three months, without ever returning to it e.g. SIM card registration, and a service provided for the USAID. Continuous or recurring services are those m-services which the MBO creates regularly, say yearly e.g. Senior High School placement checker. Day-to-day m-services are those which need daily updates e.g. informational services like health tips, horoscope messages, inspirational messages, love guide, jokes (see Figure 6.14).

Figure 6.14 An Informational MCC Mobile Service "Baby 4 U"

Source: Mobile Content.Com Office Wall Hanging

MCC has established, and maintains working relationships and partnerships with some institutions for whom it has developed or is proposing to design various m-services (see Table 6.3 for a sample list).

Table 6.3: Some Institutions which have Relationship with MCC

Institution	Relationship
Ghana Education Service	Developed an SMS-based system to deliver the 2010 Basic Education Certificate Examination (BECE) placement results to candidates. This service was taken over by a competitor for two years but has been re-contracted to MCC.
The Coca Cola Bottling Company of Ghana	Developed a mobile application used to collect Sales and Stock data used to evaluate outlets and to generate reports for management
Business & Financial Times (B&FT)	In partnership with B&FT launched the premier mobile newspaper service in Ghana.
Databank	Customers check their account balances and transactions on E-Pack and M-Fund
E-Tranzact Ghana	This service enable customers check their account balances and transactions and purchase recharge vouchers
Ghana Institute of Journalism (GIJ)	Provision of institutional student body election results via the mobile handset
Busy Internet	Powered a service to enable clients purchase top up credit to browse the Internet
Ghana House of Parliament	Provided the communication tool between constituents and their Members of Parliament
Trade and Investment Programme for Competitive Export Economy (TIPCEE)	Mobile application is used to collect Scout information. System provides feedback to farmers and manages their farm operations
Ghana Social Marketing Foundation (GSMF)	The GSMF Mobile application is used to pre-sell and receive payments. The back-end system helps manage the Sales person in trade
Radio Stations in Ghana	Opinion polls, comments, promotion and loyalty promos as well as IVR song downloads.
TV Stations in Ghana	Provide services to enable crawling and mini promos

Source: Mobile Content.com website

The different types of m-services in MCC's portfolio suggest the existence of different m-business capabilities used to create those m-services. Drawing from Table 6.3 MCC's partnership with Business and Financial Times to create the mobile newspaper service, and the short code service for the radio stations suggest an *informational* m-business capability. Similarly, the service for providing examination results to basic high school graduates upon sending a query to a short code, suggests *interactional* m-business capability, whilst the service with Busy Internet that enables clients purchase top up browsing credit, suggests *transactional* m-business capability.

The partnership with the institutions (as seen from Table 6.3) to deliver m-services suggests a type of resource which MCC has i.e. IS-business partnership, and external relationship management, as well as IS technical skills to create these m-services (Wade & Hulland, 2004).

6.3.2 Firm History and Profile

Mobile Content.Com Limited (hereinafter called MCC) is a limited liability company started in 2004, and could be described as the leading Ghanaian mobile value-added service provider, the preferred link for music, sports, news games, health, inspiration etc on mobile telephony. The company seeks to build a link between entertainment and information for mobile users, and continuously discover new frontiers in lifestyle-changing mobile-based products in Ghana and selected West African countries. Its mission statement is that

> MCC connects mobile users with affordable and innovative access to reliable, exciting and up-to-the-minute information though their handsets, utilizing SMS, MMS, IVR and WAP to deliver products with real value to local subscribers.

In short, MCC has the vision to provide simple and affordable m-services which meets market needs and increases users' access to news/information, entertainment, whilst potentially impacting on their health and wealth. *The ultimate goal is an environment where mobile telephony provides the subscriber with modern means to make informed decisions with minimal effort through their handsets*!

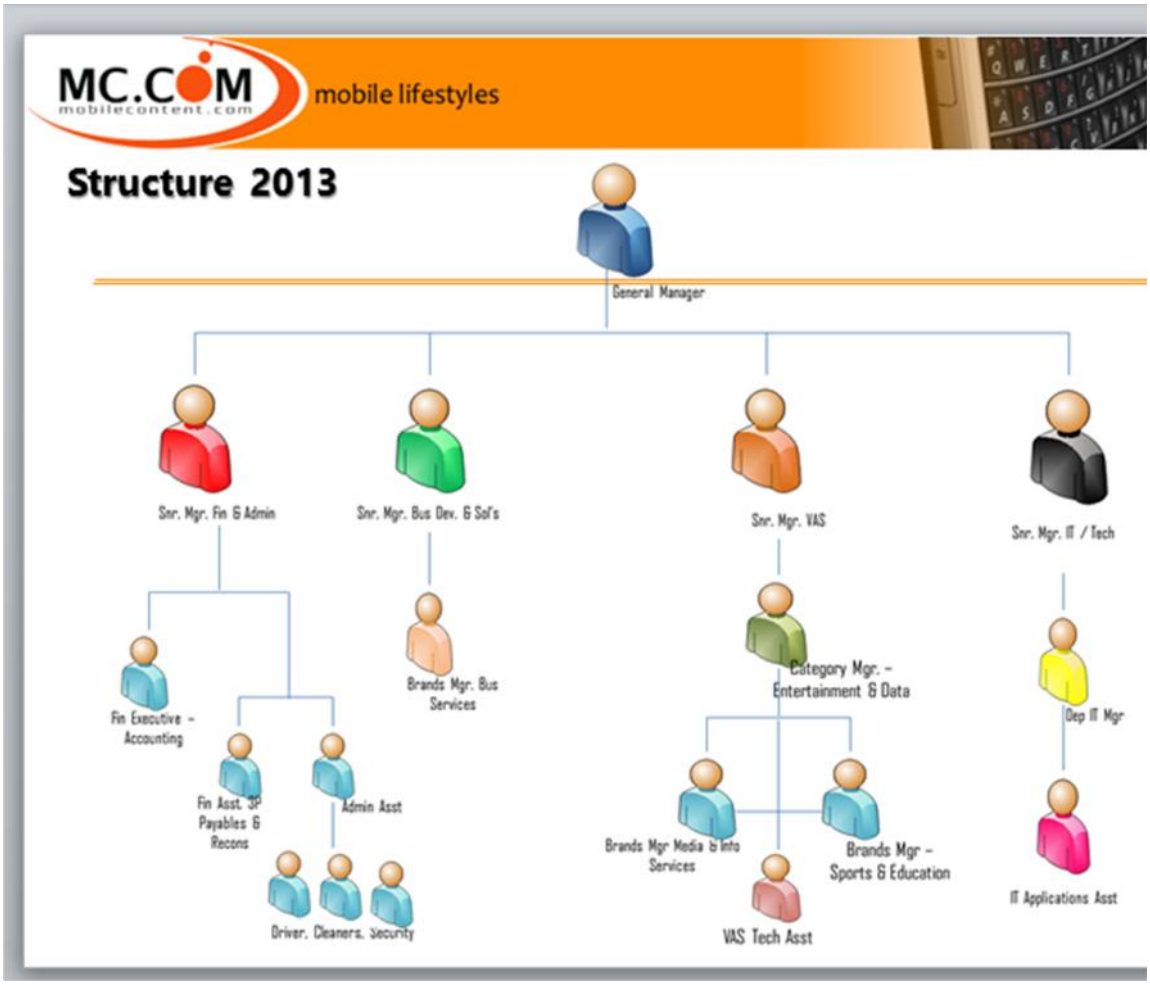
MCC has a three-member board of directors, one of which is the managing director. Reporting to the board is a managing director to whom a general manager report. Four senior managers, one each for Information Technology (IT), Value-Added Services (VAS), Business Development and Solutions (BDS), and Finance & Administration (FA), report to the general manager (see organisational structure in Figure 6.15). Each senior manager has one middle-level manager, some of whom have other subordinates. The senior managers have about four-year prior experience with mobile services prior to joining MCC. According to Ekow des Bordes, the Information Technology Manager, after doing IT support for a mortgage bank, and selling banking software in another company, he finally entered m-services in 2005/6. He has a degree in Management and Computing Studies in addition to some IT industry certifications.

Rudolph Kotoka, the Business Development Manager (BDM), who holds MBA in Management Information Systems, previously worked for Rancard Solutions, another mobile services provider. Johnny Abdallah, the Value-Added Services (VAS) Manager intimates that

"I am typically a Marketing person... [I did] *Marketing at both the bachelor's and the master's levels"*

Before joining MCC, he has worked in the media, and learnt about mobile services on the job in another company.

Figure 6.15: MCC's Organisational Structure



Source: Email Communications with MCC General Manager

Overall, all the company's activities, which has both local/national and international foci hinges on the tenets of trust and being ethical. The company has thus established a reputation for good business practices amongst other industry players and business partners. Ekow sees MCC as "*a pacesetter that others follow*". Mr. Osae, CEO of Online Media LLC, a fledgling third-party mobile content developer believes that

"MCC is *doing its best in the mobile content delivery sector as compared to some other similar companies in Ghana.*"

The goodwill coupled with its reputation for innovation has won MCC some local and international awards. John Torto, the managing director intimates that in 2008, a United

Nations body awarded MCC for helping ensure transparency during the Ghanaian presidential and parliamentary elections that year. In 2011, the company was also adjudged the Best Content Provider (BizTechAfrica, 2011; Daily Guide, 2011), and was nominated for the same award in 2012 (Dowuona, 2012).

MCC's history and profile suggest the presence of IS technical skills within the firm. For instance, the IT Manager, Ekow has technical skills needed in the creation of m-services.

6.3.3 Responding to Environmental Changes

MCC started business by offering mobile short codes through which listeners could send text messages to radio stations as a way of contributing to programmes. At the time (after the year 2000 and beyond) more and more radio stations were springing up in the country's major capitals and towns. These stations were in search of ways to indulge and make users contribute to their programming. Ekow, remembers that since 2004, the radio stations give out MCC's short codes to enable their listeners contribute to their programmes via SMS daily. Some of these stations include Joy FM, Peace FM, Radio Gold. Some television stations also use the short codes.

"That is what the company started with... the radio stations", Johnny confirms.

Ekow further explains that MCC approached the stations with the m-service concept development. When one station accepts and begins to use it, others follow suit.

"*You know, we captured most of the radio stations when we started so the rest were just following up*", he shares.

The observed 'domino effect' seems to have been enhanced by the nature of ownership of these radio stations; most of these stations are together under an umbrella company. For instance, Joy FM (Accra), Luv FM and Nhyira FM (Kumasi), Adom FM (Tema), and Skyy FM (Takoradi) are all under The Multimedia Group. Therefore, as Joy FM started using mobile short code text-ins, their sister stations came on board.

"*... so we started with the top ones... the Joy FMs, Peace FMs and Radio Golds*", Ekow intimates.

John succinctly corroborates that, it helps to "...s*tart, expand and establish footprints* [so that] *people get to know your expertise"*.

Another m-service MCC rolled out in its early stages was to offer caller ring-back tunes and wallpapers for downloads. John recalls that this was when mobile telephony was spreading. Spacefon (now MTN), and Buzz (now TiGo) had entered the GSM market to compete with OneTouch (now Vodafone). Spacefon and Buzz had broken the seeming monopoly that OneTouch enjoyed over GSM mobile telephony. Apparently, the competition in the mobile space caused these networks to deploy unique services one of which was ring-back tune. When one subscribes to a ring-back tune, anyone who calls their number hears a selected song or tune – instead of the normal mono tone to signal a connecting call – until the call is answered. Currently, this service is replicated, and still running on all six mobile networks.

The two main m-services MCC provided in its beginnings suggest the existence of two m-business capabilities at the time. For instance, the short code service for the radio and TV stations to allow audience to send messages suggests *informational* capability. On the other hand, the m-service for downloading ringtones and wallpapers suggest *transactional* m-business capability.

6.3.4 Resource Reconfiguration and Retirement

Between 2008 and 2010, television reality shows were catching up and becoming popular amongst Ghanaians. This was possibly because some Ghanaian television stations were playing back *American Idol* (a US-based music reality show). Within this period, Ghanaian television houses collaborated with mobile network companies to create and run local reality television shows. For instance, whilst Ghana Television (GTV) ran *Ghana's Most Beautiful*, a female pageant show, TV3 Network ran *Mentor*; a music reality show in multiple successions i.e. Mentor I, II and II year after year up until now. For MCC, a related m-service it provided for the television houses was a short code to allow viewers to vote for their favourite contestant(s) via premium SMS. The number of viewer votes was crucial because it very much determined who was evicted and who remained in the competition until the following eviction week. Therefore, before and during the show, hosts incessantly prompt viewers to send in their votes to ensure continuous stay for their favourites. The more text messages sent implied more revenue split amongst the mobile network operator, the TV station, and m-service provider like MCC.

Johnny recollects that

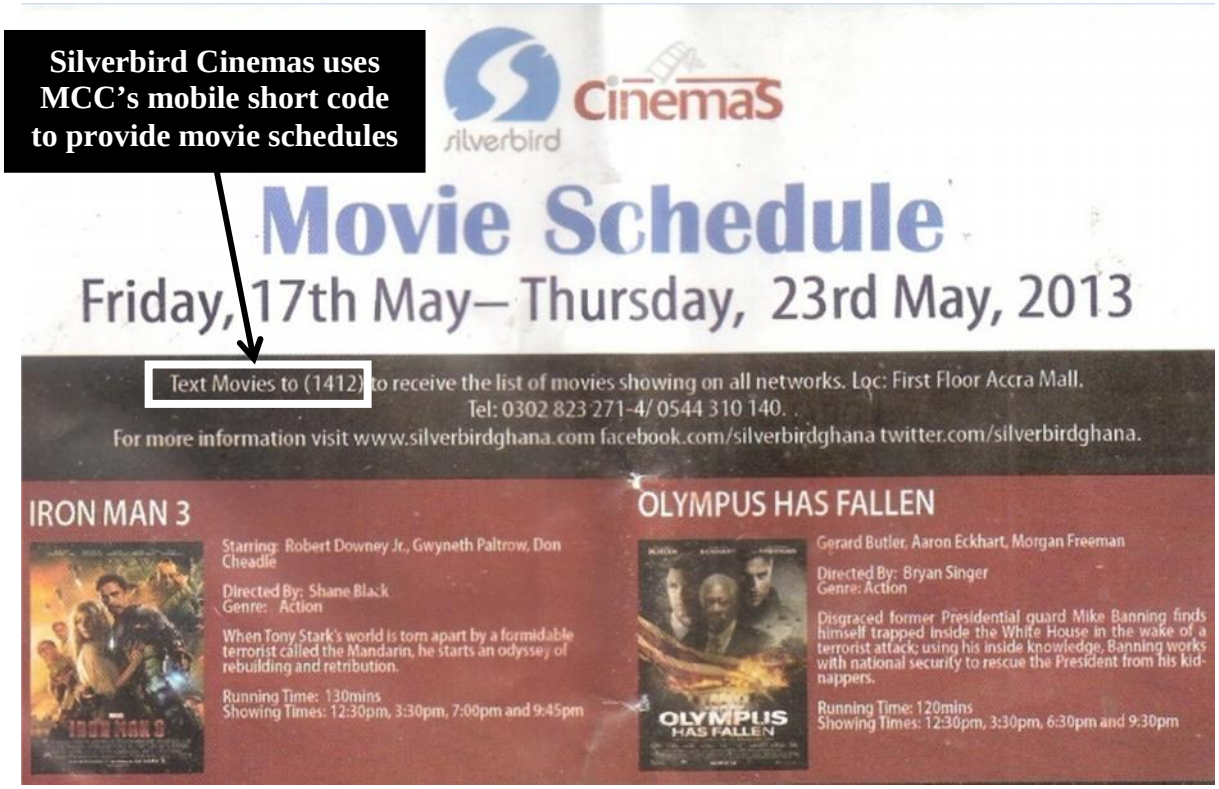
"*In 2009 we had the Silverbird movie schedule* (see Figure 6.17), *the Viasat text and win trivia on TV... that was when the reality shows were very popular.*"

"I know we hosted one or two major ones, but in recent times, we are not into promotions", he prompts.

Here we see an existing partnership with the TV stations – in the provision of text-ins via short code – turned around to provide another service – SMS-based voting for television reality shows. The voting m-service seems to be an extension of the already existing message

text-in service. Hence, in all we see a reconfiguration of existing resources to fit a new situation.

Figure 6.16: Silverbird Cinemas' Movie Schedule with MCC's Short Code



Source: Accra Mall Silverbird Cinema Schedule

6.3.5 Resource Replication

The success MCC has with the SMS voting service for the TV stations in Ghana has enabled it run a similar service for an adult television reality show *Big Brother Africa*. This show normally hosted in South Africa, and sometimes Nigeria, airs on paid satellite television, *DSTv* provided by MultiChoice Ghana Limited. Through SMS, viewers in Ghana can vote for any of the contestants who hail from various African countries including Ghana. In addition, MCC provides sports information about local and international football leagues for mobile users who subscribe to receive them.

Overall, even though many different services come up every year, Rudolph, intimates that "*MCC captures value from these services in terms of i) relationships (with a particular customer which continues to generate more business opportunities); and ii) revenue (e.g. a service which generates income e.g. the school placement system)".*

6.3.6 Managing External Relationships

John shares how MCC strives to be relevant to its market. This implies the need to innovate, diversify its m-services and sometimes expand into new markets. With about twenty companies in the m-services space in Ghana, competition quickly creates a saturated market for any service which one company introduces e.g. radio and television text-ins. John shares that towards the end of 2010, the market had reached a level where MCC's growth and relevance to subscribers depended on the ability to introduce new services.

"In another way, there was a need to define services that were relevant to the customers' lifestyles", he adds.

Defining new m-services hinges on understanding and providing alternative ways for how mobile users consume information, leisure or entertainment. In addition, new m-services imply that MBOs study and meet both people's changing needs and lifestyles; they should bring different ways in which people can live their existing lifestyles. These expectations require innovation and creativity.

"So in here (at MCC), *we encourage people to think creatively. We make the team look around in the mobile telephony market for opportunities for what consumers do and how we could bring it into mobile telephony*", John shares.

With this mind-set, MCC company places high premium on being innovative. When it identifies an opportunity around which to create a new m-service, the company develops a concept and presents it to target institutions. Some of these institutions include mobile network companies like MTN, TiGo, Airtel, and Vodafone. Johnny hints that

"*In pitching the new m-service's concept, we normally look at what the network is doing, and its focus, so we capitalise on that to give you the service*".

Sometimes after the pitch, a network would require some changes and customisations. For instance, Johnny recalls that MCC at a time realised that mobile networks were not reaping much benefits from generic m-services, which MCC replicates across all the networks. To create some value for the networks, MCC decided to brand m-services to for instance, fit the network's colours and image to make their subscribers relate the m-services appearance to the deploying network.

Here, we see MCC maintaining and building on its relationship with individual and corporate customers as a way of satisfying them in the provision of new m-services. The ability to achieve this, suggests the existence of *external relationship management*, an information systems resource (Wade & Hulland, 2004).

6.3.7 A Matured Capability

Collectively, MCC management agrees that two of MCC's most important m-services are the Results Checker service, and the School Placement service it offers for the West African Examinations Council (WAEC), and the Ghana Education Service (GES) respectively. The former affords parents and/or candidates in the Basic Education Certificate Examinations (BECE) to receive their results via SMS. The latter allows parents and/or candidates to text

their details to a mobile short code to receive a reply with the details of the senior high school in which the candidates have been placed (by GES' Computerised School Selection and Placement System).

MCC started the results checker service in the year 2008. The results checker was a response to the frustration that parents and candidates face to access their results from the West African Examinations Council (WAEC). Everybody who wanted results had to go to WAEC or wait for it to arrive by post. According to Johnny, the traffic over the results checker's short code suggested people's acceptance and excitement with the service. Interestingly, MCC's results checker was the preferred choice over a scratch card system which was also available at the time. However, the change in government after the 2008 presidential elections in Ghana affected the delivery of the results checker m-service. A new company was awarded a contract to print scratch cards for checking the results on the Internet. Johnny remembers that

"*All of a sudden, they said 'no more SMS', because someone has printed scratch cards. So they started with the cards and we had to stop*."

In addition to the 're-introduction' of the scratch card system, there were other reasons why MCC's system lost popularity. According to Johnny, even though the card cost 2 Ghana cedis, and MCC's system cost 0.60 Ghana cedis, the card could be used thrice, and more importantly, enabled users to print the results out on paper – a feature which was not available via SMS. Furthermore, Johnny admits that,

"E*ven without the adoption of the card, MCC could not compete with the scratch card company because officials from WAEC and the GES had approved the card over the SMS system*".

Here we see MCC having *interactional* m-business capability to develop the BECE results checker. However, a change in government, and a subsequent award of a new contract for a competing services forces MCC to *retrench* the capability used to create the school checker m-service. After MCC provided this m-service over some years, we could say that the MBO achieved some capability *maturity*, which has one outcome as *retrenchment*.

6.3.8 Capability Renewal

MCC went out of business in providing the results checker m-service. "*So we moved to the school placement*", Johnny said calmly, and displaying knowledge of the stiff competition within the mobile business ecosystem. He explained that an m-service that guarantees at least 300,000 users every year is bound to have competitors encroaching, trying to get the nod to run it by "*lobbying people to get it*". To beat such competition, "*you need to think on the go*", Ekow advises.

The decision to move to and focus on the school placement service was also a response to the challenges parents and guardians faced in knowing which senior high schools to which their wards had been placed. Hitherto, one had to visit all three or four chosen schools before knowing the school in which one has been placed. The alternatives to having this information were to i) go to the GES office or ii) wait for a placement letter from the GES – the letter's arrival was dependent on the postal system's efficiency. Johnny observes that the best solution was to start the m-service to check school placement.

Even though MCC still runs the school placement service, the contract went to a competitor for sometime before MCC won it again. According to Ekow,

"MCC previously had it for two years, then due to a change in government, it changed hands to a competitor, then returned to Mobile Content."

In consonance with the innovative mindset of creating m-services, MCC continuously updates and makes incremental changes to their services. For instance, information handling in the school placement m-service is evolving regularly. *Initially, mobile users received a short text about school placement, now MCC is making it as exciting as possible.* Johnny explains that,

"*Previously, the system could not detect a wrongly entered index number, and tells senders that they were not placed in any school. However, we have built in that functionality to detect wrong numbers."*

Now, the system rather replies with a prompt to enter the correct index number if it detects a wrongly entered number. On the other hand, the system returns the needed information i.e. upon receipt of a correct index number.

Sometimes, people complain about having been placement in schools they never chose. These complaints come because candidates and/or their parents have forgotten about their choice schools; which candidates select in April, several months before the placement in December. To enhance the situation, MCC deploys the placement checker about three to four months prior to December to allow candidates to make necessary amendments with WAEC or GES. Since the placement is not done for all candidates at once, MCC has built in a way to inform candidates in which batch they are, in order to reduce anxiety.

"We also add WAEC's phone number so you can call for help. This is on all networks", Johnny adds.

We saw from the account in the previous section that MCC *retrenched* its capability to create the results checker m-service. We see here that, encouragingly, MCC was able to *renew* the capability into creating the school placement m-service. This scenario also confirms the existence of resources like *IS development*, and *IS technical skills*.

6.3.9 Needed Resources

Rudolph shares that creating and perhaps maintaining such a system is not very capital-intensive. On the other hand, technical expertise seems to be the most important requirement in designing and running such a service. At the time of creating the school placement service, MCC had the technical skills so there was no need to hire, retrain or outsource. Nevertheless, some investment went into acquiring high-end servers to handle the pressure that was coming from about 400,000 people nationwide. John, concurs that MCC

"*...had 60-70% of needed resources i.e. knowledge of how to develop the services, and the ability to manage financial requirements*".

He adds that MCC retrained some of the staff members in customer service so they could assist people who called with complaints about the service. It was important to have good relations with the customers to guide them through such challenges. MCC also requested the mobile network operators to increase the throughput[2]. Apart from these, there was the need to have "*connections with people in high places*" to win the contract. Rudolph intimates that

"*Yes, we needed skills to understand the customers' needs and to make it a consumer-friendly service. Yet, there is still the need for someone to take you there to see the big people. When you are running such a business, you need to know people – the big man up there."*

[2] Since network operators create and give out the mobile short codes, they assign the capacity of text messages that code can handle smoothly. MCC thus requested an increase in that capacity from all the partner networks. For instance if previous capacity managed 100 messages per second, there was the need for cater for 2000 messages per second in the new [school placement] m-service, hence the need for an increment.

Here we see the existing of three main information system resources. First, MCC had to acquire new servers with higher capacity to match the increasing traffic. This suggests *IS infrastructure*. Second, there was need to request for higher capacity from the mobile network operators; this suggests *external relationship management*, whilst retraining some personnel in customer relationship suggests *IS-business relationships*.

6.3.10 Capability Reconfiguration

In addition to MCC bidding to develop applications and services for institutions, the company sometimes creates bespoke m-services. Rudolph intimates that some of the requests are not realistic. Nevertheless, MCC attempts to provide the best solution possible. In the worst-case scenario, MCC may decline to proceed with those it turns down. For instance, recently, a church requested a short code-based service through which its congregation could pay tithes. "How do you possibly do that, the maximum you can charge on a short code is 1 cedi, whilst someone's tithe could be 100 Ghana cedis. You can imagine the number of one cedis you have to send to the short code to pay that amount. The price on the short code is set by the network provider, and a 1 cedi code is the maximum you can have", he explains further.

On the other hand, the Business Development Manager recalls a request that led to the successful creation of an m-service. This m-service was for the USAID in 2012. The international development partner at the time was running a short project to train health practitioners on how to use Zinc to treat paediatric diarrhoea. From MCC, USAID needed a mobile solution that could i) collect feedback from, and ii) test the knowledge of, the people trainees. USAID sent information and weekly quizzes to the trainees. Therefore, in a typical week each trainee received about three messages – two as lesson recaps, and one as a quiz. Trainees who provided correct responses to a certain number of questions in a month won a reward.

"*So we built the platform for them. It sends a tip on Monday, Wednesday, and Friday, and a quiz on Tuesday to the trainees. It also sends appropriate feedback about the trainees' answers to quiz questions*", he adds.

Johnny further explains MCC built the USAID m-service partly from an existing m-service. Apparently, this system was similar to the normal service for sending entertainment tips or school examination results. The main difference in USAID's m-service was the need to make it a two-way free system. In other words, trainees should be able to send and receive messages to and from a short code free. Johnny explains that

"This is not possible; there is no free short code to meet such a requirement".

By default, all short codes require a message sender to pay at some point i.e. either when the message goes out, or when the requested message is received. From Rudolph's explanation, they wanted a system that works like a collect call. To create such an m-service, MCC made some changes to the default setup. Johnny explains that MCC had to reengineer some programming codes to bypass the short code through an online platform and to avoid the billing.

"That is where we had to do a lot of work – to rewrite a script – and then tie it to a bulk [SMS] *account although it will pass through our SMS gateway. We already had a framework, but it did not support what they wanted, so we had to change the framework"*.

This service successfully ran for three months to the satisfaction of both parties. Based on this initial success, USAID intends to subscribe to the service again. According to Rudolph,

"*This service ran for three months. Even though they have indicated that they will do the service again for another set of trainees this year, they've not firmed on the schedule... but that's a typical something we did for a one-off period and washed our hands off it*."

From the USAID experience, we see MCC designed a script to make some changes to an existing platform to build the one for their new client. This achievement suggests first, the availability of *IS technical skills*, and *IS infrastructure* used to deliver the firm to the USAID. Moreover, the adaptations made to the existing platform suggest a reconfiguration to MCC's capability to arrive at the new or modified m-service.

6.3.11 Further Capability Maturity

The experience with previous m-services forms a good foundation for yet another m-service targeted at the Social Security and National Insurance Trust (SSNIT). MCC is currently waiting on some networks to supply short codes to facilitate a launch. This m-service would allow SSNIT contributors to check their social security contributions and/or student loan balance by sending a message to a short code. The information is tied to the contributor's mobile number to ensure information security. Interestingly, SSNIT also requested for a free-way service in which contributors can send and receive information free.

Even though there was no free short code, it was easier to convince the mobile network operators to improvise because of SSNIT's large customer base.

With the number of m-services increasing, and more to follow in the near future, MCC has undergone some internal restructuring to ensure efficiency and effectiveness. John shares that around the years 2011 and 2012, when the number of mobile networks increased to six (with Glo's launch), MCC extended its services to cover all six networks, instead of just four previously. This increase caused a reshuffling of personnel. The company hitherto had about four people managing the relationship with and services deployed on each mobile network; i.e. MTN, Tigo, Vodafone and Airtel. Typically, an MCC manager responsible for MTN is in charge of ensuring smooth running of all types of MCC services (be it education,

information, entertainment et-cetera) at the same time. This arrangement changed to one in which each of the services are assigned one manager, creating roles like Information Services Manager, and Education Services Manager. John explains that

"...the board of directors decided that we shifted from brand management to network management".

MCC also dropped some of its m-services, because, first, those services were not generating as much value as it did previously e.g. general bulk SMS. Other dropped services were one-off service which MCC dropped to avoid monotony in the market, and to maintain company image as innovative e.g. C*rack-a-Safe promotion.* Rudolph recalls MCC shed the bulk SMS in May 2012 because many firms have entered that market. Even there are websites where people can send messages to many people at a time, sometimes free. MCC also observed very low traffic in terms of the number of messages sent within a month. Currently, MCC does not offer bulk SMS as a commercial service, but rather limits it for internal use e.g. sending notifications.

We see from the above that MCC responds to changes within its ecosystem or environment. For instance, an increase in the number of mobile networks caused MCC to extend the number for networks on which it hosts its m-services. Similarly, the MBO moved managers across brands rather than staying with individual networks. Such arrangements suggest *reconfiguration* of resources. Similarly, we see retrenchment of some resources because of the number of competitors offering the same basic service e.g. the bulk SMS.

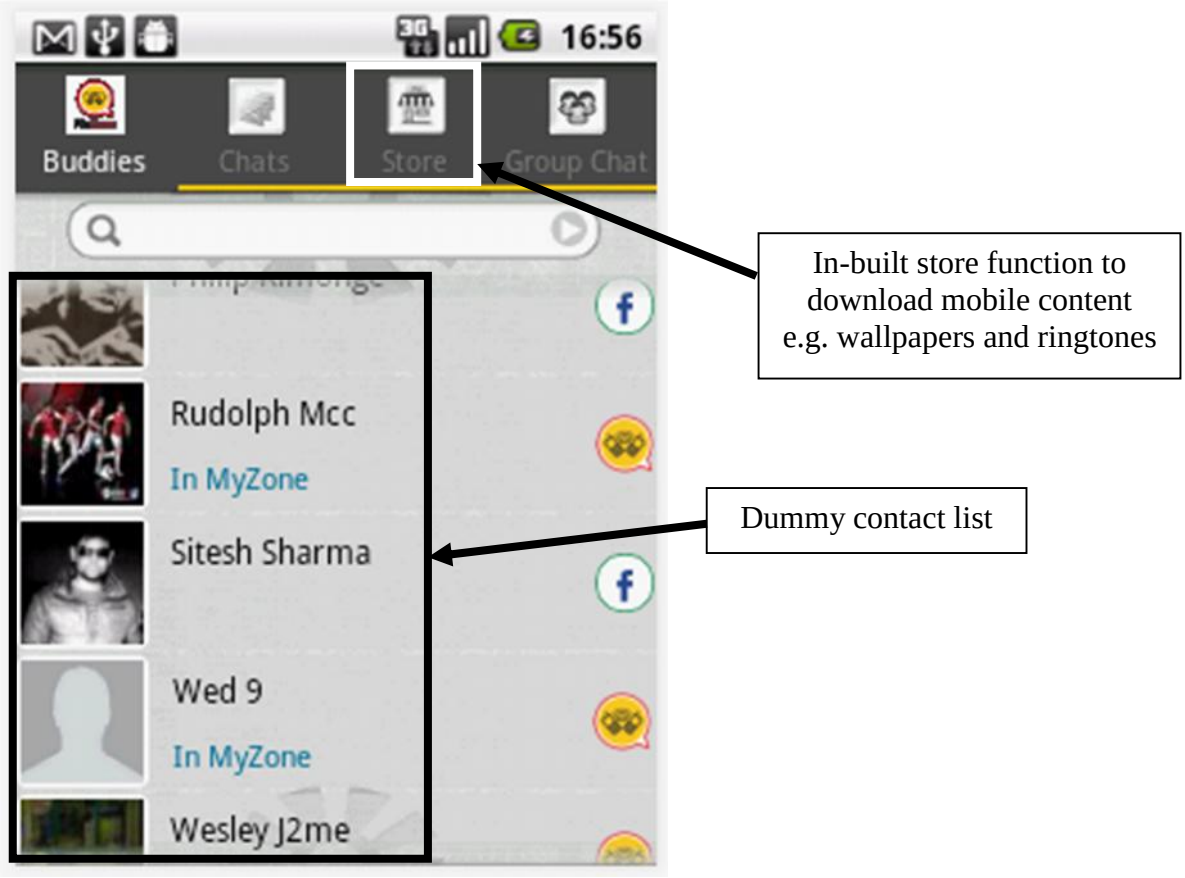
6.3.12 Current and Future Projects

MCC has gained great experience in m-service creation and delivery. Having developed several m-services for both individual and corporate needs, the company has recently designed one for the National Service Scheme (NSS). The NSS is the national body responsible for registering and posting tertiary educational graduates to undertake a mandatory 10-month engagement in various organisations in the country. Each year in September, the NSS makes graduates and their postings available website (www.nssghana.org), the same platform where graduates apply to do national service. MCC's system proposes to deliver the national service postings to the graduates' mobile phones. Rudolph is hoping that MCC's record of accomplishment with previous services like the School Placement would secure a nod for this project.

MCC has also begun the development of m-services for smartphones. These are normally known as *apps*. The apps are in two groups; one for in-house ownership, and the other available for other interested business consumers. Two of the in-house apps include *MyZone* (See Figure 6.17) and *Cards Cafe* (See Figure 6.18). MyZone is a response to the threat new data-enabled instant messaging apps like *Whatsapp*, and *Tango pose* to SMS-based m-services like short code text-ins. MyZone is to serve as an instant messaging application for sending text-based messages, exchanging photos, and to have group conversations with contacts at a much cheaper rate than traditional services. Having foreseen the potential for such non-SMS based apps to affect revenue from SMS traffic, Johnny intimates that MyZone is designed to "*encourage people to spend money*".

"*There is a store in the chat application, where you can buy music, wallpapers, games... so you can actually browse the app, and when the store is updated you get a notification to perhaps make a purchase using mobile money or your airtime*", he explains.

Figure 6.17: Screenshot of MCC's *MyZone* chat application

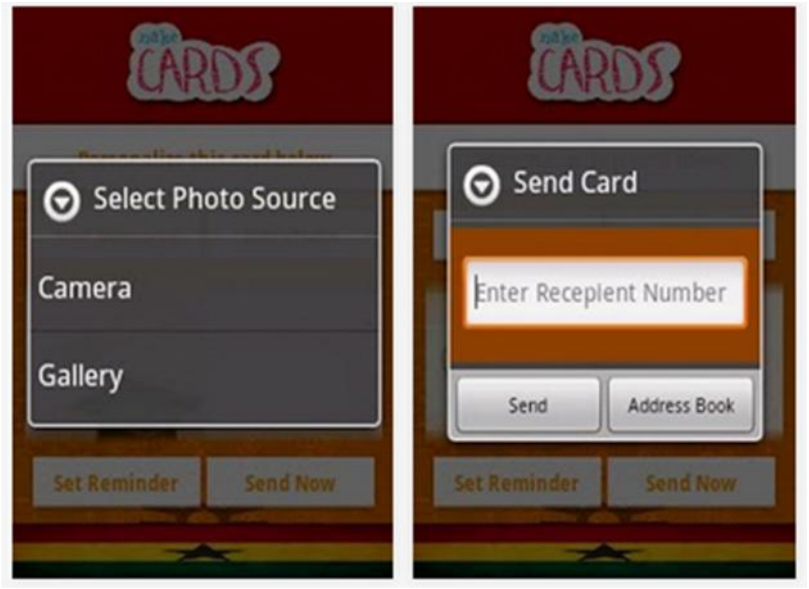


Source: Google Play Store | 19 July 2013

Over time, MCC hopes to customise MyZone for the media houses so that their audiences can have a single stop of seamless interaction – be it sending a contribution, or question, voting or accessing some information.

Another in-house app is *Cards Cafe* (See Figure 6.18), a fun greetings card app which allows users to add an image and message to an electronic card before sending. Interestingly, recipients can view the card even without installing *Cards Cafe* on their handset.

Figure 6.18: Screenshot of MCC's Greeting Cards app – *Cards Cafe*



Source: Google Play Store | 19 July 2013

Since these apps are not network-specific, MCC is considering rebranding some of them according to the networks' specifications. Johnny explains that...

"*...sometimes the networks want exclusive products to enhance their competitive urge, and possibly to attract people to use particular services*."

Such customisations would be extended to other apps to be built for businesses or corporate organisations. The main reason is that simply building and launching an app does not make it necessarily marketable. Hence, building the app for specific organisations may ensure that their clout and customer base would push the apps acceptance and use. Johnny advices that,

"*Ghanaians have not yet adopted apps fully. So for an app to be fully in the market, you have to use the appropriate bodies to get them out there*".

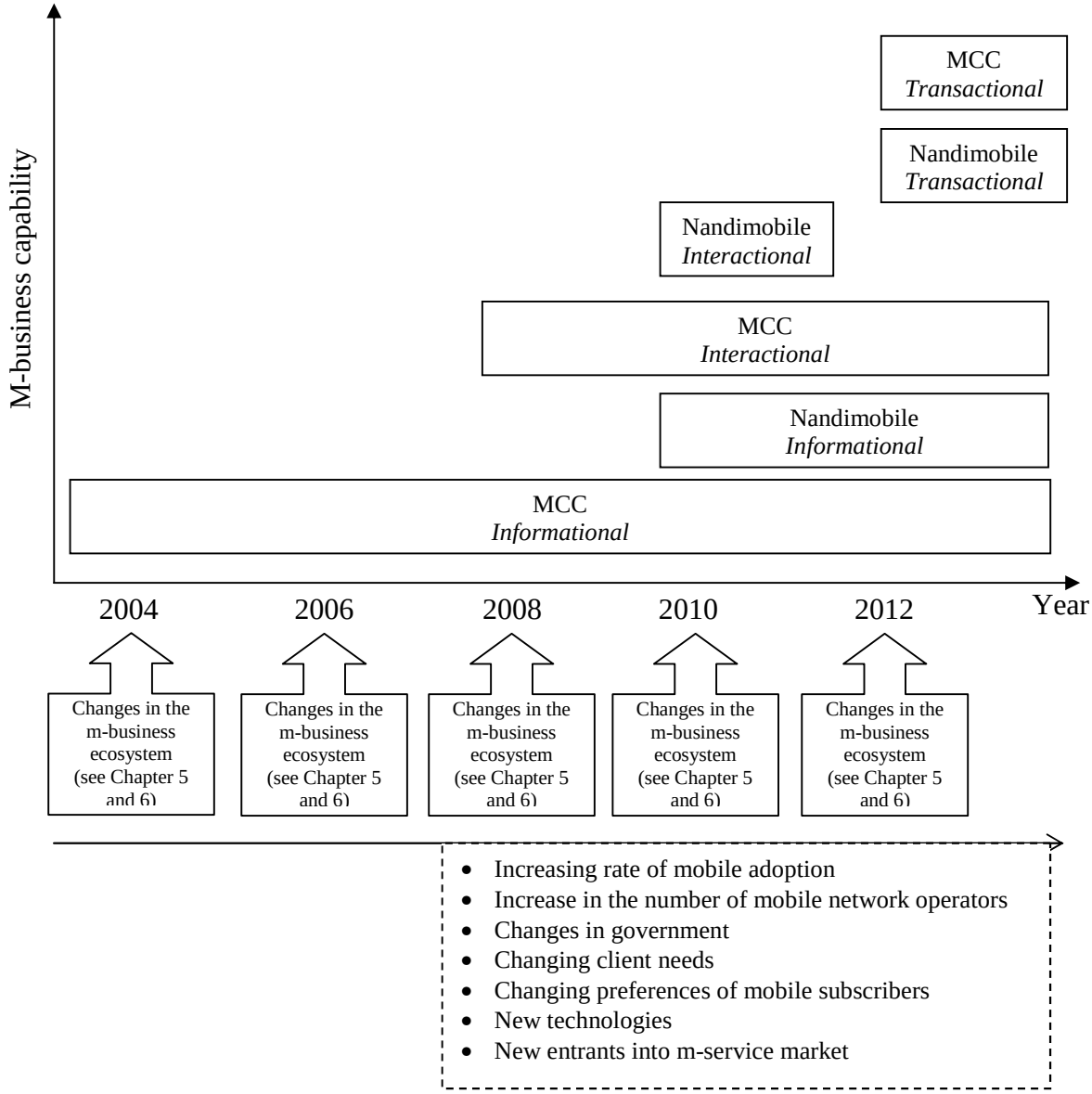
In concluding, Rudolph notes that mobile value added service providers are generally focused on information-based services, but MCC is moving towards enterprise solutions. He adds that, "*these are solutions that MCC thinks benefits Ghanaians.We bring such services to the individuals' phones to make life easy*."

6.4 Summary

The case studies presented in this chapter suggest the availability of different m-services, resources, m-business capabilities, and processes for creating these capabilities. The following sections provide an analytical summary of m-business capabilities, resources, actions to acquire and develop the resources and the impact thereof.

The m-business capabilities deduced and listed in Table 3.1 would be used to analyse the different capabilities used by the case firms to create their m-services. From the case studies, there is evidence of the development of three m-business capabilities i.e. informational, interactional, and transactional (see Figure 6.19).

Figure 6.19: Summary of M-business Capabilities in Case Firms



Source: Author's Construct

CHAPTER SEVEN

ANALYSIS AND DISCUSSION OF FINDINGS

7.1 Introduction

The purpose of this study is to explore how Ghanaian MBOs deploy and develop resources to create m-services. The previous chapter presented evidence of how two MBOs exhibit the phenomenon under study. This chapter draws on the tenets of Critical Realism (see Chapter Four) to analyse the evidence presented vis-à-vis the research framework (see Chapter 3).

7.2 Resources for Developing M-business capabilities

The development of capabilities depends on resources. From the case studies there are a number of resources, which the case firms had. For Nandimobile these resources include initial funding from the Meltwater Incubator (financial resource), co-founders (human resource), office space (physical resources) and computing equipment (technology resources). For Mobile Content.Com (MCC), the available resources were human resources (board of directors, management and staff), capital, and computing equipment. Due to the company's earlier activities, management believes that goodwill amongst initial customers or users of their services attracted subsequent customers. These resources fall under IT-based resources and non-IT-based resources. According to Webb & Schlemmer (2008), IT-based resources include i) *IT knowledge* i.e. the extent to which a firm possesses a body of technical knowledge about objects such as computer-based systems ii) *IT operations* i.e. the extent to which a firm utilises IT to manage market and customer information, and iii) *IT objects* i.e. computer-based hardware, software and support personnel. It seems that both firms have IT knowledge i.e. the technical knowledge to produce mobile services; IT operations i.e. using computers and Internet communicate with clients and for generating documents like order

forms, invoices and receipts; and IT objects. The non-IT based resources include office space and general human resources including sales and marketing manager, and business development manager.

Similarly, in relation to information system resources discussed in Section 3.3.1, the key IS resources identified here include external relationship management, IS-business partnerships, IS infrastructure, and IS technical skills.

7.3 M-Business Capabilities Development

The Capability Development Lifecycle explains the process of developing capabilities from resources as explained in Chapter Three. The analysis of this stage recognises that there are three stages i.e. founding stage, developing stage, and maturity stage.

7.3.1 Founding Stage

Continuing from the discussions in the previous subsection, NandiMobile determined a reason why they needed a particular resource, and what purpose the resource was going to serve. For instance, when there was the need to expand sales, the founders recruited two Sales Managers, also charged with recruiting two more sales officers. In addition, the company hired Joseph because of the need to develop new mobile apps. Two of the co-founders Edward and Michael consider all firm activities and decisions as collective and thus did not want to disclose whether nor the current technical team did or did not have the technical skills to do app development. A plausible reason may however be the need to free up the founders to concentrate on more strategic duties and perhaps brokering more deals. Further, the local and international attention and recognition may be taking a toll on their availability to be involved in technical development. Similarly, the Mobile Content.Com (MCC) case also provides evidence of the founding stage. For instance, the increasing number of mobile

networks operators in Ghana created the need to expand existing services to cater the new ones. John intimates in a follow-up email to author that, MCC hired a new IT Manager, VAS manager, and General Manager because of increase in the number of network operators and the business in general. The observations concur with the assumptions in the capability development lifecycle that at the founding stage firms identify a reason for acquiring a resource (Helfat & Peteraf, 2003). In addition to these readily observable tangible and intangible resources, the discussions in the literature review in Chapter Two notice a suggestion for the inclusion of customers in the creation of mobile services (Martin, Lopez-Catalan, & Ramon-Jeronimo, 2012). Both NandiMobile and MCC provide evidence in this regard. For instance, Tigo served as a (re)source of invaluable knowledge of customer service processes to NandiMobile which the latter used in revamping its Gripeline. Requests from USAID formed a basis for the creation of a new form of mobile service which did not exist. Overall, the following table summarises the various resources and the reasons for their acquisition in both firms.

Table 7.1: Summary of Resources in Case Firms

Case Firm	Resource	Reasons for Acquisition	Supporting Reference
NandiMobile	Human resources e.g. Sales Managers, and Programmer	To expand sales, and to develop new mobile apps	(Webb & Schlemmer, 2008)
	General Resources e.g. financial, computing, network infrastructure	To enable the delivery of mobile content services	
	Existing mobile services e.g. Infoline	To meet customer need	
	Customer need/request	*Not applicable*	
	Human Resources e.g. VAS Manager, IT Manager, General Manager, Business Development Manager	MCC was expanding service provision to additional networks, expanded business, to build business into the future.	(Webb & Schlemmer, 2008)

Mobile Content.Com	Social network capital (relationship with key partners and customers)	To foster the acceptance of MCC's applications especially within government	(Webb & Schlemmer, 2008)
	General Resources e.g. financial, computing, network infrastructure	To enable the delivery of mobile content services	(Webb & Schlemmer, 2008)
	Existing mobile services e.g. results checker	To meet customer need, or to take advantage of a market opportunity	
	Customer need/request	*Not applicable*	

Source: Author's Construct

From the overview of dynamic capabilities already presented, the resource-base theory provides a way to examine the potential for resources to create competitive advantage. In applying the characteristics to the resources, first NandiMobile's Sales Managers were *valuable* because they were to help decide on new strategies to win more clients and to generate revenue. Similarly, within MCC, all the managers were valuable because they helped the firm to expand to serve other networks thereby creating new revenue sources. The extent of rareness across case is however not straightforward because for instance, Edward the Business Development Manager was able to win some clients initially. MCC also operates without a designated Sales Manager [see Figure 6.3.1 and 6.3.2], and NandiMobile seems to be postponing business with government institutions because they do not have the social network capital – yet they are making strides in the market, and being recognised.

The characteristic of resources being *imperfectly imitable* in NandiMobile may not be applicable to those resources listed in the Table 7.3.1 because it is not difficult for firms to replicate them – by new recruitment or poaching. Recall that one of NandiMobile's sales managers left for another content provider, whilst Rudolph joined MCC from Rancard Solutions – another content provider. Nevertheless, NandiMobile's resources that may bear

this attribute are the three-year training in the MEST Training School, the seed capital, and the subsidised office space. These are resources which only MEST graduates have. Competitors may have similar resources in other forms which may be either inferior or superior to NandiMobile's. For MCC, we could say that imperfect imitability lies in their perceived market position as the pioneer mobile content provider firm in Ghana. Mr. Osae of Online Media LLC, somewhat corroborates this assertion. The nature, size and complexity of services MCC provides attests to their position. An off-record comment from one of NandiMobile's co-founders also suggests a confirmation. These later resources i.e. MEST facilities for NandiMobile and market position for MCC seem to bear the attribute of non-substitutability. Apart from these, all other resources, competitors can imitate or substitute other resources used in the mobile content business e.g. infrastructure, mobile short code, personnel like programmers and sales managers.

7.3.2 Developing Stage

The case firms exhibit this stage of the capability development process by seeking viable alternatives to develop their resources after the founding stage. In terms of *coordination*, NandiMobile's co-founders seem to have recognised the potential for the Sales Managers to be in line with the current goal of pursuing market expansion. The evidence in the case depicts the Sales Manager's role in firm. Similarly, the firm examined customer needs and requests for *compatibility* with its existing resources. For instance if Tigo's request was not compatible with NandiMobile, the contract may have been discarded, as MCC did with the client who wanted a short code service to collect a church congregation's tithes. Likewise, MCC pursued USAID's request for a mobile service even though it was unusual, and required some extensive customisation.

In terms of *learning*, Nandimobile shows repetition in several actions. These include assessing and matching customer needs with the relevant product or customisation. For instance, the firm learnt from Tigo and ACCA. Nandimobile's ability to provide the Speedbanking service for First Capital also suggests the ability to *learn* to adapt their processes to create different innovative services for different customers from different industries.

The same can be said about MCC which has a lengthier client list which includes government agencies like the Ghana Education Service. Nevertheless, in both firms learning was not done entirely by the members within i.e. the founding members. At certain points in their lifecycles, new experienced members were introduced. This concurs with previous literature, which notes that sometimes organisations exercise "grafting" i.e. obtain new members (Huber, 1991). For instance, whilst Nandimobile employed new sales officers and an apps programmer, MCC employed a host of managers. After identifying the need for resources, and acquiring and exercising them, there is sometimes the need to respond to changes within the firm's environment. Such response is called *reconfiguration*. The Nandimobile case shows several instances of reconfiguration. First, the firm made significant changes to their product i.e. Gripeline because of Tigo's changing needs. However, another environmental change that happened is the departure of the *Tigo Cash* unit. The response was to continue dealings with his aide, but to no avail. Similarly, within MCC, there are several recognisable reconfigurations. First, in its early years, the company had the caller ring-back tunes for just Spacefon and Buzz – two of three GSM networks at the time. However, this service had to be extended to cover all six GSM networks that currently exist. Further, the increase in the number of networks caused management to reshuffle managers' portfolios. Instead of one manager handling all services, relationship and issues between MCC and one mobile network

provider (MNO), each manager was now responsible for all matters pertaining to offering one particular service e.g. information services to all the available MNOs.

7.3.3 Maturity Stage

The result of the *developing stage* is a *new capability* created with *coordinated, learnt and reconfigured* resources. The underpinning research framework conceptualised this *new capability* as *mobile business capability*. The result of Nandimobile's development process resulted in an *informational* m-business capability. The company's ability to create Infoline – and all its subsequent customisations is evidence of this m-business capability type. From the case, Infoline is a service which a firm can use to send information to clients i.e. firm-push advertisement. Customers can also text to its short code [1945] to request information from firms subscribed to it i.e. customer-pull advertisement. In addition, Gripeline is evidence of the existence of *interactional* m-business capability within Nandimobile. A firm using Gripeline can have instant messaging with its customer in the form of a chat until a customer's issue or question is resolved or answered. In addition, the undisclosed service the firm offers to First Capital Plus is evidence of *transactional* m-business capability.

Similarly, MCC exhibits different types of m-business capabilities resulting from its resource development activities. For *informational* capabilities, MCC has shown the ability to create services which provide mobile users with information about movie schedules, sports tit-bits, and information about pregnancy care to mention a few. All these services are however customer-pull information-based services. On the other hand, there is evidence that MCC provided firm-push services for two institutions i.e. i) for Ghanaian parliamentarians and their constituents, and ii) Ghana Institute of Journalism to send executive election results to student

voters. According to the Business Development Manager, MCC has stopped offering firm-push information service i.e. bulk SMS as a core product. The company's *interactional* m-business capability lies in its ability to have provided USAID with a service, which allows the institution to send information to course participants. USAID also used the same service for quasi-examination purposes – to receive and assess responses to questions sent to course participants. Further, MCC has two running services with *transactional* capability i.e. a service with E-Tranzact (an independent bank card operator), which allows customers to buy airtime; and a service which allows Busy Internet's customers to top-up their Internet browsing credit from the internet service provider. A third transactional service is waiting to launch; recall that Johnny mentioned *MyZone* as an instant messaging *app* with a store where users can buy items like wallpapers and music and pay for using their airtime (see Figure 6.19 for the m-business capabilities developed in case firms).

Continuous use of the m-business capabilities makes them part of the firms' cultures. For instance, whilst Nandimobile continues to deploy Infoline and Gripeline, MCC still creates various mobile applications. All the firms' applications are results of continuous use of *developed* firm resources. This continuous use of the capabilities characterises the *maturity* stage, which that has six possible *outlets* i.e. retirement, retrenchment, renewal, redeployment, replication, and recombination.

So far, there is no evidence in the case suggesting that Nandimobile either retired or is planning to retire any of its developed capabilities. However, Nandimobile retrenched its *interactional capability* with Gripeline for a while. Selorm and Edward explained that though the service looks good on paper, it is difficult to implement because of the extra investments needed by the subscribing firm. Therefore, for some time now, the company neither promotes

nor sells it anymore; the only client using it now is doing so limitedly. Notwithstanding, Edward explained that the Nandimobile now sells Infoline either with or without Infoline. In other words, there has been a *renewal* of Gripeline which was in retrenchment to fit a new purpose – in Infoline. Similarly, there has been a *redeployment* of Gripeline in the creation of the *HealthLine* app for Vodafone. The idea behind the app is to connect HealthLine's television viewers to the health workers who host the show. This was not the main purpose for creating Gripeline, but it works. There is no evidence of *replication* yet; Nandimobile has not extended its services to another country as of now. There is however evidence of *recombination*. Michael intimated that "*everything is coming together*". The company has combined its informational capability to create Infoline and the Business directory with its interactional capability to create Gripeline to arrive at an integrated platform such that when mobile users search and find a company, they can continue to send an instant message and receive a reply.

There is evidence of new capabilities within MCC taking different paths after their development. Whilst MCC stopped offering some services like the mobile voting, and WAEC results checker, the underlying capability is still in use and so no capability has either been *retired* or *replicated* yet. Similarly, whilst there is limited to no use of the bulk SMS facility because many firms are now offering the same service – *retrenchment* – its related *informational* capability resulted in the School Placement Checker and the movie schedule services. This is evidence suggests *redeployment*. Considering the USAID service for the trainees, MCC modified its *interactional* capability used in creating applications like television reality show voting to suit the new demand. This suggests a capability *renewal*. MCC has not yet *replicated* these services in another country yet. Nevertheless, it is recombining its wallpaper and ringtones download service with the new app, suggesting *recombination.*

7.3.4 Strategic orientation and the Environment

In both case firms, the path taken by a particular capability was a result of some willingness to take that path. Whilst Nandimobile bid for, won and executed the contract with British Council for instance, MCC chose that for a church, it would not create a service that enables tithe collection. Again, it is Nandimobile's decision to integrate Gripeline with Infoline and the business directory even though the market suggests that Gripeline is not practically feasible. Similarly, it is MCC's decision to stop offering bulk SMS as a product, but only to attach and use it with another service as need be. These scenarios showing the willingness to choose a certain path illustrate the *strategic direction* of the m-business capabilities in the case firms.

The discussions herein cannot ignore the role of the environment in causing the development or maturity of a certain capability. First, the environment caused retrenchment of Gripeline in Nandimobile, and bulk SMS, and television reality show voting in MCC. The same environment specifically, the proliferation of smart phones and tablet computers is causing both firms to develop various *apps* that which use mobile internet instead of SMS. The role of the environment in the capability development process is important.

7.4 Impact of Capabilities

Having recognised the unsettled nature of the impact of capabilities, this study identified two forms of impact based on Wang and Ahmed's (2007) review. The two forms are financial-based impact and market-based impact. There was difficulty in obtaining detailed financial information from the case firms, creating a constraint in the analysing financial-based impact (see appendix for John Totoe's email). Whilst MCC was 'unable' to "divulge" financial information, Nandimobile's was not detailed enough to measure this impact type. Nevertheless, the market-based impact of the firms' capabilities is evident from the

discussions so far. As conceptualised in the research framework, market-based impact in the context of content providers relates to creation of new-mobile solutions. Content providers further launch these services on the mobile network providers' infrastructure for consumption by the network subscribers – which together form a market (see Chapter Five). The impact here is how mobile content providers cause a change within that market i.e. the new value added to the existing core voice-, text- and data-based communication.

For instance, whilst Nandimobile used its informational m-business capability to affect the market with Infoline, and all of its bespoken customisations; it also used its interactional capability to affect the market with Gripeline. Further, using its transactional capability, it has been able to create the *Speedbanking* service for First Capital Plus and its customers.

Similarly, for MCC, whilst the election reporting service for the Ghana Institute of Journalism was a result of its informational capability; its interactional capability resulted in the BECE results checker, the senior high school placement checker, and the service for USAID. In addition, the firm's transactional capability resulted in services for E-tranzact and Busy Internet account top-up services.

Table 7.2: Market-based impact created

Case firm	M-Capability	Example Market-based impact
Nandimobile	Informational	Creation of Infoline Customisation of Infoline for other institutions like ACCA, and British Council
	Interactional	Gripeline Vodafone Healthline app
	Transactional	First Capital Plus' *Speedbanking*
	Informational	Election reporting service for Ghana Institute of Journalism

Mobile Content.Com	Interactional	Customised solution for USAID BECE Results Checker School Placement Checker
	Transactional	E-transact and Busy Internet account top-up services

Source: Author's construct

7.5 Discussion of Findings

This section discusses the analysis presented in the previous section towards an evaluating the research questions, and drawing propositions. The discussion is in three parts reflecting the three research questions and the constructs in the research framework.

7.5.1 Identifying Resources

This subsection relates to the initial part of the research framework. It also aims at answering the first research question; *what resources do Ghanaian MBOs use to create m-business capabilities*? The related analysis in section 7.2 provides insights to help answer this question. The analysis suggests that within MBOs, different types of resources come together to help the creation of m-services. The availability of one kind resource without another resource has a potential to hamper achievement of firm goals. This observation suggests the first proposition that

Proposition 1: MBOs use a set of resources used by firms to create m-business capabilities e.g. IS skills, IS infrastructure, IS development

In answering the research question about what resources MBOs use in creating capabilities, this study shows that there is a set of different resources including IS infrastructure, IS development, external relationship management.

7.5.2 M-Business Capabilities Development

This section relates to the second part of the research framework i.e. how MBOs develop resources to create capabilities. The related analysis suggest resources in MBOs go through the founding, developing and maturity stages as Helfat and Peteraf (2003) posit in the capability development cycle. However, the difference lies in first; the six outcomes of the maturity stage, and second, the type of *m-business capabilities* created. From the analysis, none of the firms' capabilities was either replicated or retired. The *worst* form of non-use was retrenchment in both firms. For instance, Gripeline from Nandimobile, and bulk SMS services in MCC went dormant for a while – retrenchment. The situation where no retrenchment has taken place suggests the relevance and endurance of some capabilities. Further, these characteristics seem to be highly dependent on management's insight and or decision. In the case of Gripeline, management decided to *integrate* Infoline with Gripeline. Similarly, for bulk SMS, MCC management decided to use it internally.

One interesting observation from this study is that for instance, after Nandimobile understudied the activities of Tigo's customer service centre in order to make Gripeline a better application, the project failed to take off. This caused a retrenchment and even a retirement to some extent of the capability to create the m-service. Yet, the firm is currently making plans to integrate Gripeline with other m-services such as the business directory and Infoline to make it one holistic application. This observation suggests that even though an m-service project fails to succeed as expected, the company's ability to *learn, reconfigure and coordinate* existing activities and resources based on the failure ensures some benefits; recall that learning is a part of the three capability development processes. This informs the second proposition that

> ***Proposition 2:*** The presence of dynamic capability processes e.g. learning, coordination and reconfiguration enables firms to derive value from failed projects.

Overall, the answer to the question about *how do Ghanaian MBOs create m-business capabilities* is that first, firms learn from the environment or within; coordinate existing resources to match incoming new resources, and reconfigure both sets of resources to become compatible in achieving firm goals.

This proposition is supported by the assertion that in IT environments, it is important to maintain a link between the environment, customers and knowledge (Chang, 2012, p. 1209).

7.5.3 Impact of Capabilities

This section relates to part of the research framework which sought to understand impact of *m-business* capabilities. From the analysis, the development of the various capabilities had a focus on meeting a customer need. However, even though the proposed m-service could be ready, and the MBO may be ready to implement the service, there is need for the client to be ready too. Even though Nandimobile's Gripeline was tweaked to meet Tigo's expectations, the change of managers caused the project not to take off. This observation informs the proposition that

> ***Proposition* 3:** The success of deploying m-services depends on the client's readiness, commitment, and the presence of gettable resources on both sides.

7.6 Summary

This chapter set out to analyse the case studies in the previous chapter. It also undertook discussions of the analysis towards answering the research questions and arriving at propositions. The table below shows the main issues in terms of the research questions and their matching propositions.

Table 7.3: Summary of Research Questions and Matching Propositions

Research Questions	Matching Findings and Propositions
What capabilities do Ghanaian MBOs use to develop mobile services for individual and business adoption/use?	There are three types of m-business capabilities i.e. informational, interactional, and transactional capabilities.
What resources do Ghanaian MBOs use to develop m-business capabilities to create mobile services?	MBOs use a set of resources used by firms to create m-business capabilities e.g. IS skills, IS infrastructure, IS development.
How do Ghanaian MBOs develop and deploy resources to create capabilities to create m-services?	The presence of dynamic capability processes e.g. learning and reconfiguration enables firms to derive value from failed projects
What is the impact of m-business capabilities on Ghanaian MBOs?	The success of an MBO deploying m-services depends on the client's readiness, commitment, and the presence of gettable resources on both sides.

Source: Author's Construct

CHAPTER EIGHT

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

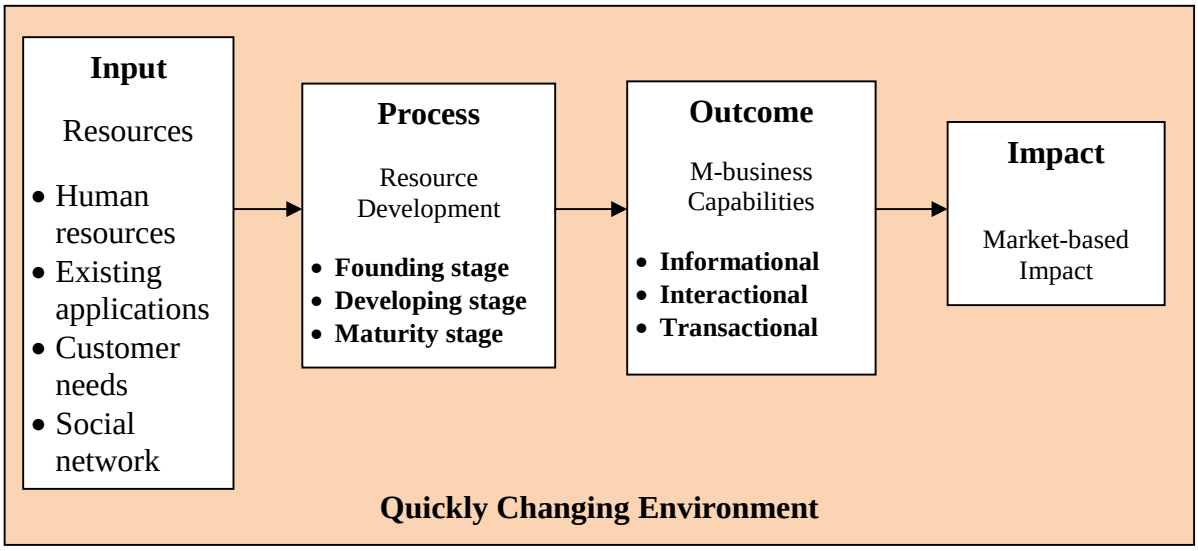
8.1 Summary

This study began with an overview of the global adoption of mobile devices and services. This phenomenon referred to in academic literature as *mobile computing* includes research and issues about mobiles and mobility in information systems (Wiredu & Sorensen, 2006; Ladd et al., 2010). However, there are several subcategories within the broad field of mobile computing, one of which is *mobile business* which describes the organisational aspects (of mobile computing). Mobile business was this study's priority in order to satisfy departmental academic expectations. To find out possible research areas to contribute to, this study undertook a review and discussion of past mobile business research to find out the dominant issues and conceptual approaches (Chapter 2). The review observed a paucity of research about the *Economics, Strategy and Business Models* theme of mobile business research. From the several gaps identified, this study focused on studying how firms within the mobile ecosystem e.g. mobile network operators and content providers turn resources around to create capabilities within a dynamic environment. This phenomenon directly relates to the development of information systems – one of the core activities of the *management information systems* field.

The dynamic capability framework is the prevailing conceptual approach well suited to studying this research issue. Hence, this study in Chapter Three reviewed the relevant literature to define and adapt the framework's concepts towards creating a research framework to guide data collection and analysis. Using the case study methodology thoroughly described in Chapter Four, the study collected and presented evidence of how two

mobile content providers in Ghana deploy and manage resources to create capabilities, within their environment as discussed in Chapter Five. The analysis and discussion of the findings led to four propositions that first in terms of the resources, there is a set of resources that firms use to create m-business capabilities e.g. IS skills, IS infrastructure, IS development. Second, the presence of dynamic capability processes e.g. learning and reconfiguration enable firms to derive value from failed projects. Third, success of an MBO deploying m-services depends on the client's readiness, commitment, and the presence of gettable resources on both sides. The findings also make way for a presentation of an empirically tested and revised research framework as shown in Figure 8.1.

Figure 8.1: Refined Research Framework for Mobile-Business Capability Development



Source: Author's Construct

This study's propositions as related to the refined research framework are that

1. There are three types of m-business capabilities i.e. informational, interactional, and transactional capabilities.
2. MBOs use a set of resources used by firms to create m-business capabilities e.g. IS skills, IS infrastructure, IS development.

3. The presence of dynamic capability processes e.g. learning and reconfiguration enables firms to derive value from failed projects
4. The success of an MBO deploying m-services depends on the client's readiness, commitment, and the presence of gettable resources on both sides.

8.2 Conclusions

Based on the analysis of the findings in the preceding chapter, this study draws a number of conclusions. First, within the broader area of management information systems, the human component remains very important. The findings from this study provide evidence from the m-business area to support this conclusion. This observation further extends from within the organisation to its customers who have the potential to shape firm activities, and suggests the second conclusion about the continuous existence of a multi-disciplinary trend emerging within the MIS field towards extra-organisational users and related issues. Previous assumptions of information systems being within the organisation need a revisit and possible reconceptualisation. This study shows that customers have the potential to cause substantive changes to a firm's value offering, and even business models.

Third, mobile computing provides a challenge to information systems research. The MIS field can neither ignore nor deny this challenge to its traditional boundaries. If "the IS organisation of the future will increasingly support and manage mobile devices... and a mobile workforce" (Scott, 2007), then there is equal need to make room for the study of mobility and related issues like capturing and creating value.

8.3 Implications and Future Research Pointers

This study has three main implications for research, practice and policy.

8.3.1 For Research and Theory

For research, first, this study contributes a theoretically based and empirically tested research model to explain the how MBOs deploy and manage resources to create capabilities. This goes beyond the generic frameworks (e.g. Sirmon, Hitt, & Ireland, 2007; Teece, 2007; Wang & Ahmed, 2007) that do not apply specifically to the context of m-business (den Hertog et al., 2010), and thus do not reflect the area's peculiarities in terms of how MBOs create capabilities. Hence, this study's contribution lies in the provision of a framework for understanding capabilities in m-business context.

Second, the study identifies a set of m-business capabilities that MBOs can draw on to become market leaders or stay in competition. This study posits that MBOs can create m-services using informational, interactional, and transactional m-business capabilities.

Third, this study's literature review and findings provide research areas for further empirical and conceptual development. In addition, this study's underpinning purpose to understand the resources, the dynamic capability creation process and the impact thereof in MBOs is in line with the call for "research that consolidates the main constructs [of dynamic capabilities] and capitalises on the previous research in a more structured and focused way" (Barreto, 2010).

Based on the existing literature about the dynamic capability framework this study arrived at a research framework tested within the mobile business area. The findings and analysis are evident that firms within the mobile business ecosystem exhibit dynamic capabilities. More importantly, this study lends support to measuring the impact of firms' dynamic capabilities as either market-based impact or financial impact. This helps to some extent to overcome the ambiguities of measuring overall firm performance and/or competitive advantage.

8.3.2 For Practice

For practice, managers of emerging and existing MBOs have a framework from which they can learn and understand how resources are developed to create m-business capabilities within competitive environments. The findings herein are also foundations for practitioners to develop higher order dynamic capabilities i.e. the capability to reflect on the whole process of developing and deploying capabilities, derive lessons from it, and use these in new rounds of generating new capabilities.

This study suggests that management in MBOs should continuously identify opportunities to which they could apply their current capabilities. At the same time, they should look for opportunities to modify their existing capabilities in response to their environment and the changing needs of customers.

8.3.3 For Policy

This study provides a better understanding for policymakers in the creation of legislations which affect mobile and allied businesses within the country. At the firm level, this study suggests that management should define entities and define their specific roles to avoid conflict in decision making about which m-services to develop. Such policies would also determine the allocation and development of scarce firm resources.

8.4 Research Limitations

Even though the discussions and findings generated herein may be replicated in other [m-] business types, this study focuses on m-service providers. The study is limited to the Greater Accra region. The study does not cover individuals who hawk mobile phone airtime and

devices, airtime voucher wholesalers and retailers, mobile handset and accessory shops. The study is be interested in gaining understanding about the development and management of firm resources to achieve capabilities.

The word mobile business in its classical sense has also been used to describe people or professionals whose occupations and services are made 'mobile' because they could be found or contacted via a mobile phone number which they leave behind at their physical locations. For instance, "ads for carpenters scrawled on road signs turn a craftsman with a phone into an independent, mobile business" (Zuckerman, 2010). This study does not consider such type of 'mobile businesses', nor people whose professions take them from place to place e.g. a mobile bookstore. This study restricts itself to mobile content providers or content aggregators.

The m-business capability indicators developed within this study was tested with mobile value-added services providers. The study could have extended or included other players within the ecosystem to enhance comparability and validity of the indicators.

8.5 Future Research Pointers

This study's contribution lies the in the operationalisation of the dynamic capability framework in the mobile business context. Significantly, it has tested the use of two main impact measures for dynamic capabilities i.e. financial- and market-based impact. Future research should thus consider further empirical testing and refinement of this measurement construct.

In addition, this study's focus on the mobile content providers serves as foundation to test the existence of dynamic capabilities in other firms within the mobile business ecosystem e.g. network operators and device manufacturers. An interesting extension could be testing

mobile-based dynamic capabilities within firms which implement mobile information systems e.g. firms like FC and E-Tranzact which use systems developed by content providers.

Further, this study provided evidence of resource development processes in two MBOs. Some of the capabilities developed were retrenched. For instance Nandimobile retrenched its capability for creating Gripeline. MCC also retrenched some of its capabilities for running m-services for reality shows. At certain points, some of these capabilities were *resurrected* before added to new resources or renewed. The question that future research could explore is how capabilities are resurrected.

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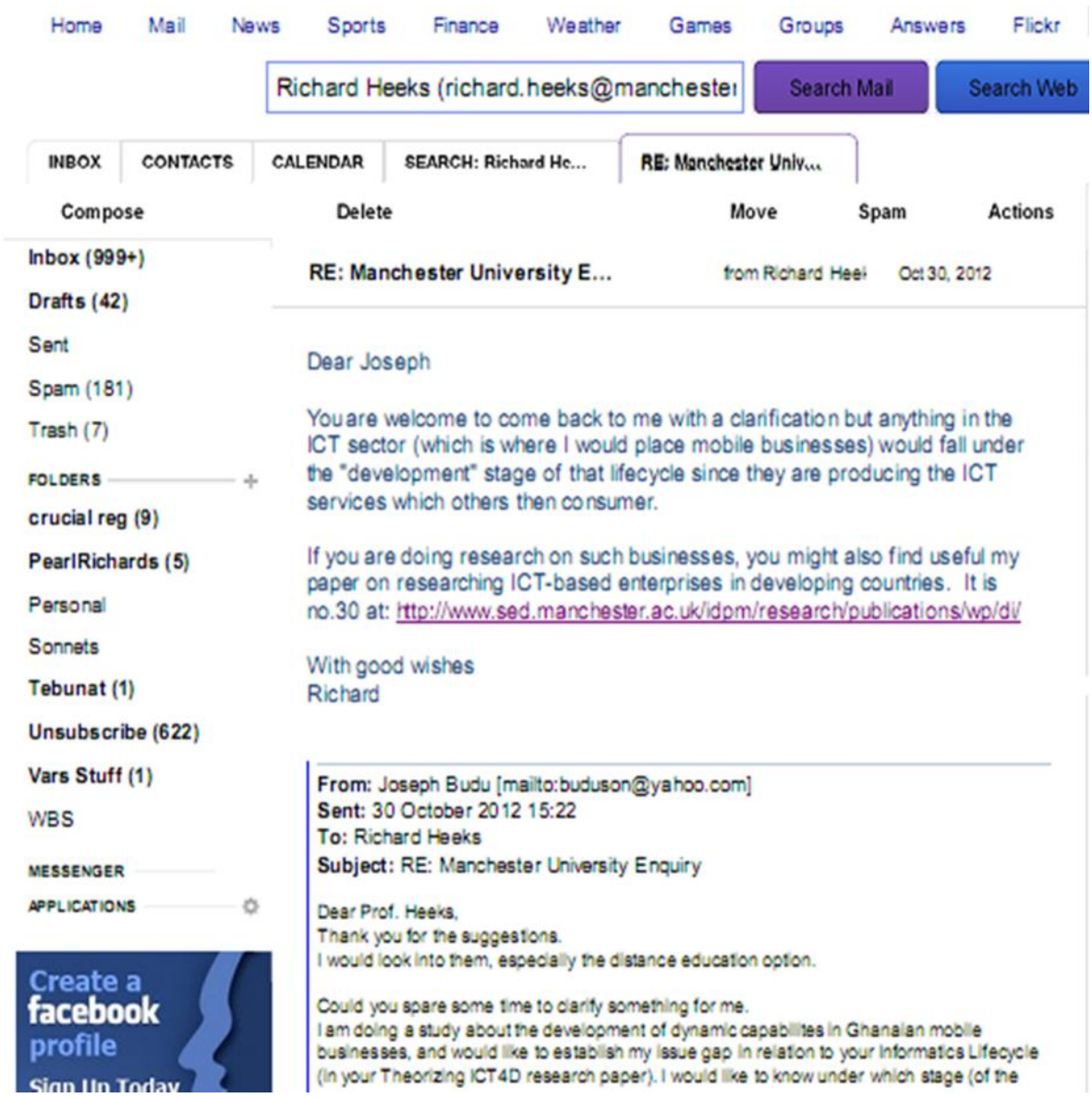
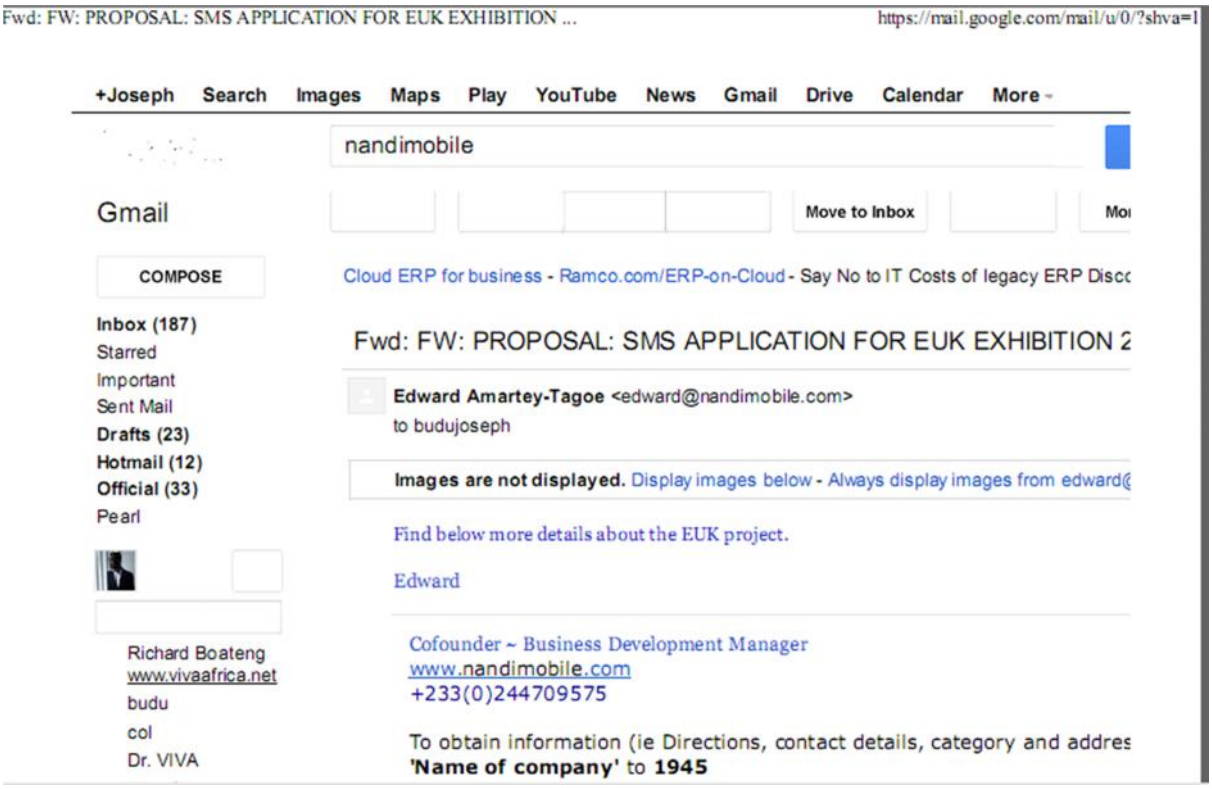
APPENDICES

Appendix A : Correspondence with subject matter specialist



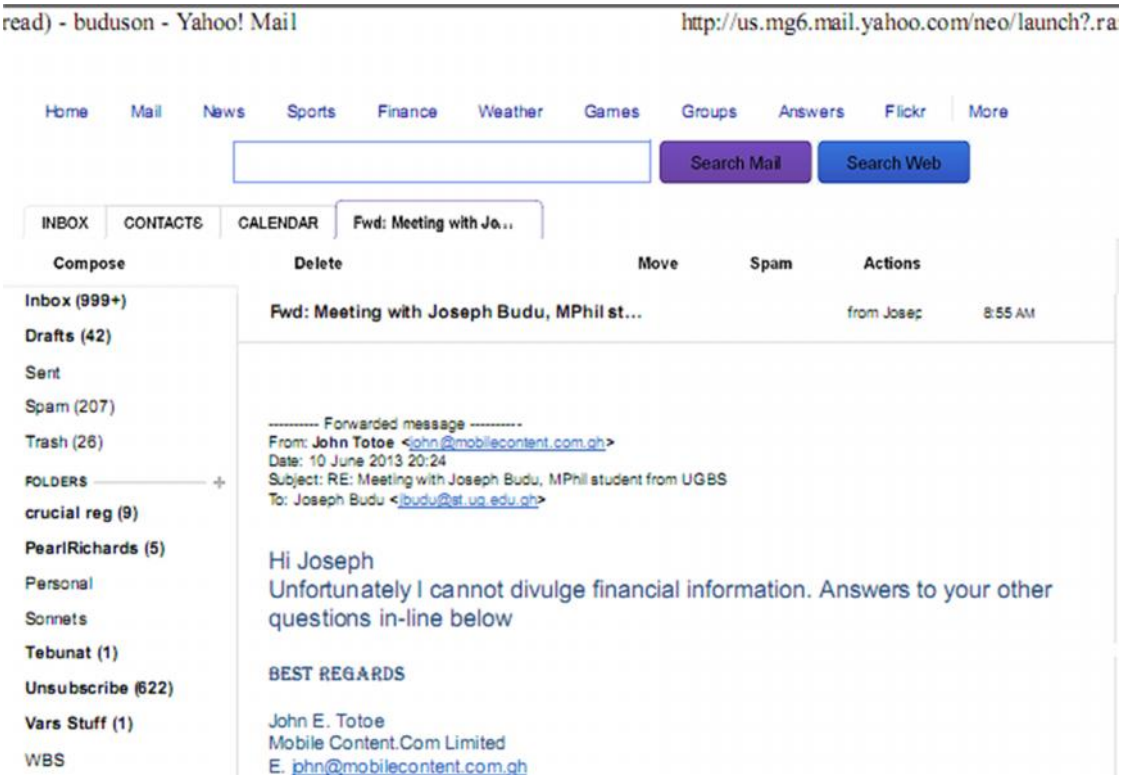
Appendix B

Sample Email Correspondence with Nandimobile



Appendix C

Sample Email Correspondence with Mobile Content.Com



MESSENGER
APPLICATIONS

You got in.
Now get smart.
Use our free calculator to compare financial aid and see what college will cost.
COMPARE NOW
cfbb Ad

M. +233244343501
T. +233302778731
F. +233302763436

From: buduson@gmail.com [mailto:buduson@gmail.com] **On Behalf Of** Joseph Budu
Sent: 22 May 2013 17:36
To: John Totoe

Cc: Rudolph Kotoka
Subject: Re: Meeting with Joseph Budu, MPhil student from UGBS

Dear Mr. Totoe,

I hope this message meets you well.
As part of my final year project work, I am developing case studies of firms in the mobile business ecosystem.
To strengthen the information I have collected so far about and from Mobile Content.com,
I humbly request a snapshot of MC.Cà financials [if you so agree].
I have attached a sample for your perusal.
In addition, I would like to ask some follow-up questions, if you could find some time to respond to them.
1. Have you ever had to pitch proposals together with another content aggregator in pursuit of a contract?
If yes, which one, and which contract was it for?

No we haven't

2. In which years did your current managers join you?

2007, 2007, 2011 and 2012

3. What need did you have to fill in employing them?
e.g. Year => need
If you sought them to join you for strategic reason, what was that reason?

2007 – Manager with experience in VAS was required because MCC was expanding service provision to additional networks

2007 – Additional IT Manager was required for same reason above

2011 – needed a GM due to expanded business

2012 – business development Manager was required to build business into the future

Spam (181)

Trash (10)

FOLDERS

crucial reg (9)

PearlRichards (5)

Personal

Sonnets

Tebunat (1)

Unsubscribe (622)

Vars Stuff (1)

WBS

MESSENGER

APPLICATIONS

You got in.

--------- Forwarded message ---------
From: **Rudolph Kotoka** <rudolph@mobilecontent.com.gh>
Date: 5 June 2013 12:34
Subject: RE: FW: Mobile Content Case Study
To: Joseph Budu <budujoseph@gmail.com>

See below,,

MyZone Chat App:
Android Phones: http://www.letigames.com/mcc/myzone.apk
Java Phones: http://www.letigames.com/mcc/myzone.jad
BB Phones: http://www...letigames.com/mcc/bb /chatzone_bb_proxy.jad

M-Books App:
Android: http://letigames.com/mcc/mbooks.apk
Java: http://letigames.com/mcc/mbooks.jad

The GM oversees every aspect of the business. He also performs admin and HR roles

Cheers!

Appendix D
Nandimobile's Proposal to British Council

Appendix E

Interview Guide - Nandimobile

In order to build detailed case studies, data on selected firms would cover the following areas. This is not an exhaustive (or specific) outline but a guide to formulating questions which capture all relevant data.

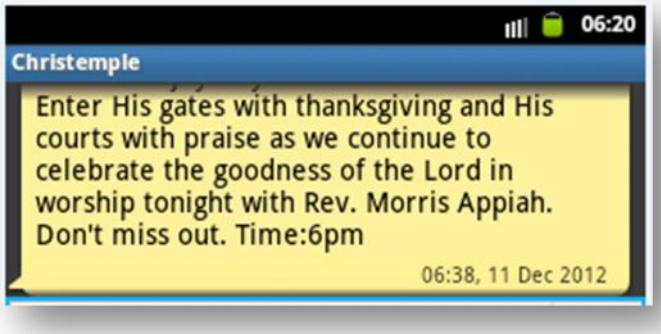
1. Firm's Background
   1.1 Objectives/Mission (Founding and Current)
   1.2 Management Structure
   1.3 Staff Structure (professional/skilled and unskilled)
   1.4 Market Focus (national, regional and international)
   1.5 Strategy (Operational, Marketing, and IS/IT)–(Founding and Current)
   1.6 Start Up Challenges and Solutions
   1.7 Present Challenges and Intended Solutions
   1.8 Financial History (if available)
   1.9 Achievements
2 Perceived competitive advantage or Strategy
   2.1 Motivations; Need, Opportunity and/or Response
   2.2 Decisions and Strategy
   2.3 Challenges/Constraints and Solutions
      2.3.1 Technological
      2.3.2 Managerial and Organisational
      2.3.3 Cultural
      2.3.4 Environmental
      (2.3.5 Interactionism Impact)

3 Resource Assessment
   3.2 Developing Resources and Capabilities
      3.2.1 Strategy and Decision Making
      3.2.2 Coordination, learning and reconfiguration
      3.2.3 Resource Substitution by firm
   3.3Managing Resources and Capabilities
      3.3.1 Change on structure and processes
      3.3.2 Customers (enticing and retention)
      3.3.3 Trading Partners–suppliers, IT Vendors, distributors etc
      3.3.4 Resource Imitation and Substitution by Competitors 3.3.5 Impact on Legals and Institutions in the Context
4. Future Developments
   4.1Planned Projects

5 Benefits Realised
   5.1 Organisation (strategic, informational and operational)
   5.2 Achievements (any of the benefits related to the company's landmark achievements and Financial Performance?)

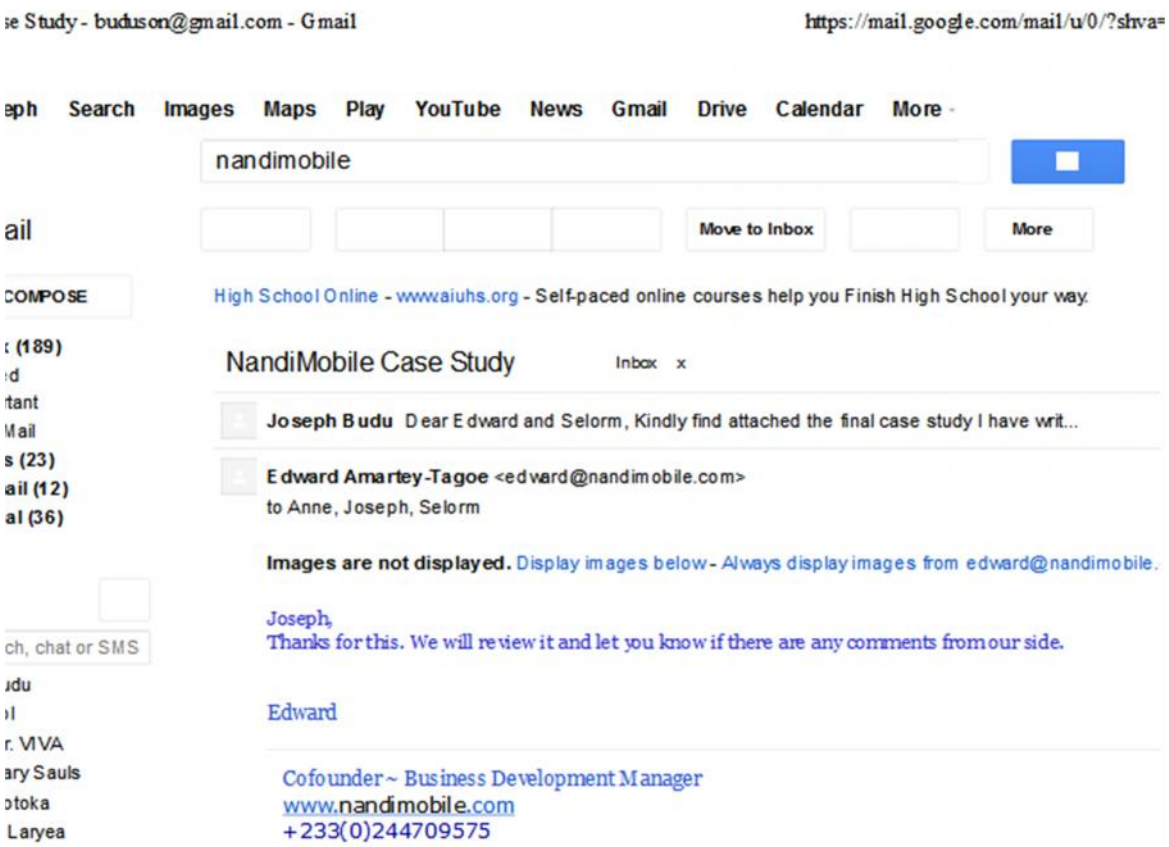
   5.3 Development (economic, e-readiness and socio-cultural)

Appendix F Product Testing



Appendix G

Nandimobile's reply about final Case Study



LIST OF PUBLICATIONS FROM THESIS

Book Chapter

- **Budu, J**., and Boateng, R. (in print) Dominant Issues and Conceptual Approaches to Mobile Business Research from 2005 – 2013. In Wei, J (Ed.), Mobile Electronic Commerce: Foundations, Development and Applications, Taylor and Francis

Conference Paper

- **Budu, J**., and Boateng, R. (2013) Dominant Issues and Conceptual Approaches to Mobile Business Research from 2005 – 2012, Conference Paper – *2013 International Conference on Mobile Business, Paper 4.* Available at http://aisel.aisnet.org/icmb2013/4

Submitted Manuscript

- **Budu, J.,** and Boateng, R. (under review) Creating Mobile Business Capabilities; towards a research framework. *International Journal of Electronic Commerce*, Special Issue on m-commerce (2014).