The strategic value of enterprise mobility: Case study insights

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Abstract: The rapidly improving price-performance of wireless technologies is providing an unprecedented platform for the development of wireless applications for businesses. This paper aims to explore the strategic value of enterprise mobility. In order to achieve this goal, it provides an overview of the literature related to mobile business applications in the work domain and highlights the findings of four studies developed in New Zealand. The paper concludes with a discussion about present challenges and the future of the mobile enterprise.

Keywords: Mobile business, enterprise mobility, case study, strategy

1. Introduction

During the past two decades the use of technologies such as the mobile phone and the Internet have revolutionized our society [7,50]. Although, the developments of the Internet and mobile phones have followed two separate paths, only in the past eight years these technologies have converged, making possible a vast range of wireless data communication technologies such as the wireless internet [44]. As a result, the proliferation of mobile Internet enabled devices is creating an extraordinary opportunity for business to leverage the benefits of mobility [9,16,17,53,59]. This technological revolution is deeply affecting the way many organizations do business, allowing firms to expand beyond the traditional limitations of the fixed-line personal computer [8,25,28,42,44,45,47,48].

Mobile business, commonly known as m-business, is characterized as the use of wireless networks and other mobile information technologies for organizational communication and coordination, and the management of the firm [7]. There is little doubt that m-business applications are providing a significant opportunity not only to enhance organizational productivity but also to transform business practices [4, 6,14,27,49,51,54,58,59]. Jain [22] suggests that most enterprise mobile applications are likely to be motivated by the need to reduce latency, increase speed of response, enhance efficiency of operations and workforce, improve productivity, boost revenues, and increase competitive advantage. Overall, wireless data communications can provide significant business benefits for corporate infrastructure, representing the next step in the evolutionary development of information systems [21,37].

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This paper aims to explore the strategic value of enterprise mobility. In order to achieve this goal, it provides an overview of the literature related to mobile business applications in the work domain and highlights the findings of four studies developed in New Zealand. New Zealand is a small, developed economy with a high-level of entrepreneurship and small business. Evidence suggests that NZ businesses are among the more innovative adopters of wireless data communications [21,36,48,51,56]. In addition, New Zealand is a nation that is typically creative and receptive to new technologies and that is used as a test bed of market innovations for large corporations. For this reason, the country provides an interesting example of the use of mobile and wireless technology, and one where lessons can be translated to some degree elsewhere - especially in Western Europe and, to a certain extent, North America.

The next section provides the overview of the literature exploring the impact mobile technologies in the firm's value chain as well as on its workforce. This is followed by an examination of four studies developed in the past four years in New Zealand. The paper concludes with a discussion about present challenges and the future of the mobile enterprise.

2. Overview of the literature

This section aims to explore some relevant literature related to mobile business applications in the work domain. Scornavacca, Barnes et al. [11] point out that the body of research in m-business is heavily skewed towards business-to-consumer (B2C) applications. In their survey of the literature, mobile business-to-employee (B2E) and business-to-business (B2B) applications corresponded only to 17.4 percent of the articles found, while papers focused on consumer applications represented 55.7 percent of the sample [51].

In contrast to the shortage of research in this field, evidence suggests that business and enterprise applications are the biggest growth area in mobile business [3,32,34,36,38,56]. The following sub-section explores the potential benefits of m-business applications in the firm's value chain. This is followed by a review of the concept of enterprise mobility.

2.1. Mobilizing the value chain

There is common agreement among authors that m-business applications are providing a significant opportunity to gain competitive advantage [4,6,13,14,27,54,58,59].

Porter [40] demonstrated the value chain as the series of interdependent activities that bring a product or service to the customer. Mobile applications can provide significant business benefits for corporate infrastructure, representing the next step in the evolutionary development of IT integration in the value chain [4,37,40].

Barnes [6] presented a systematic analysis of the potential opportunities of mobile technologies in a company's value chain (Fig. 1). Figure 1 and Table 1 illustrate the standard value chain of the firm with examples of the possible impact of mobile applications for businesses.

Based on the analysis of the possible impact of a wide range of mobile applications for businesses, Barnes [6] identified eight core and not mutually exclusive benefits: business transformation, efficiency, effectiveness, flexibility, ubiquity, connectivity, interactivity and location-awareness. The first three business benefits are considered generic to most IT applications [18,31], while the remaining five are specific benefits of mobile technologies [4,6,16,60].

Barnes [6] argued that *business transformation* can happen at different levels, by automating specific business tasks, networking and sharing information, transforming sets of business processes, transforming

Table 1
Mobile applications in the firm value chain (adapted from [6])

| Support activities	Impact of mobile applications
Infrastructure	Wireless networks and devices can help to strongly integrate remote, disparate or roaming employees into the corporate infrastructure.
Human resources	Handheld training devices and location aware technologies may be useful for remote or roaming workers (e.g. field and sales force automation).
Product and technology development	The impact of mobile technologies in product and technology development is quite embryonic. However, field testing and reporting is one area where it is likely to have an important role.
Procurement	Exceptional roaming employees who are involved in procurement might be aided by using mobile IT in the B2B domain.
Primary Activities	Impact of Mobile Applications
Inbound logistics	Mobile applications can accurately monitor inbound inputs to the firm. By knowing the location of 'rolling' inventory, times between transactions, manufacture and delivery can be further reduced.
Operations	The impact of mobile ICTs on the operations component of the value chain is likely to be enormous. There are many applications such as meter reading, customer alerts and credit authorization that would benefit from the mobile value propositions
Outbound logistics	Mobile ICTs – especially location technologies – can play an important part in outbound logistics. Fleet management systems help freight companies to monitor the status of deliveries and other outbound logistics activities
Sales and marketing	In many industries, the sales force is becoming increasingly mobile and teleworking is a very real part of sales activity. Mobile technologies allow strong integration of a remote sales force into ERP and other key systems. Mobile marketing is another emerging application in this area of the value chain.
Service	Similarly to the product and technology development activity, devices can be embedded in products to bring benefits to the service activity. Mobile technologies can provide information for field workers (e.g. technicians), increasing productivity and customer satisfaction.
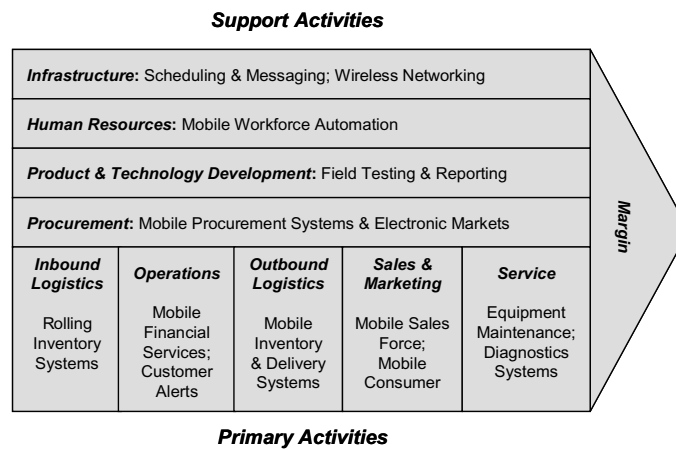
Fig. 1. Mobile applications in the firm value chain [6].

relationships with other entities, and creating new revenue streams. Westelius and Valiente [57] supported this, affirming that the core benefits of mobile technology are brought by changes to the business processes.

Efficiency is usually related to productivity gains or cost reduction achieved by process automation [2, 6,22]. Westelius and Valiente [57] noticed that processes prompted by mobile technology provide gains

in efficiency. Ali and Al-Qirim [2] studied seven organizations that are currently using mobile business applications in New Zealand. They reported from these cases that efficiency gains are the principal perceived business benefits emerging from this type of technology. Other researchers also found that mobile technologies deeply affect task performance of mobile workers and promote efficiency gains [1, 12,38]. From a more strategic perspective, Chung [15] showed that mobile applications can be of great utility in supporting organizationally-interdependent decision-making.

In contrast to efficiency, *effectiveness* can be quite subjective and difficult to measure [24]. In the case of mobile business applications, gains in effectiveness have mostly being reported in conjunction with process transformation [2,6,15,22,35,37,38]. Beulen and Streng [14] and Wolf and Heinonen [58] perceived a significant influence on the nature of the task supported by mobile technology in relation to the perceived efficiency and effectiveness of mobile workers' behavior.

Flexibility refers to the high degree of adaptability and portability of mobile technologies [6,22,37, 43]. Scheepers and Steele [43] pointed out that the use of mobile devices removes a great deal of the traditional constraints associated with using information systems with stationary computers, thus providing much greater flexibility in the times at which the system may be used – e.g. it may be possible to exchange data not just at work within working hours. In addition, Jain [22] suggested that giving workers access from wherever they are, allows them to access task-critical enterprise applications in a timelier manner than having to wait until they are back at the desktop. Barnes [6] also pointed out that in some types of organizations, such as offices and supermarkets, mobile technologies allows rearranging IT equipment without significant cabling issues. Müller and Zimmermann [37] added to this point by drawing the attention to the role that passive and active tags, microprocessors, sensors and transmitters have in the convergence of physical and informational – enabling a higher level of continuous and automated information processing.

Ubiquity is frequently labelled as "mobility" [23,35,55,56]. Junglas and Watson [26, p. 578] pointed out that both terms are conceptually similar: *"Whereas ubiquity takes the lens of the environment to provide the functionality for a user to move, mobility takes on the lens of a user being active component in a ubiquitous environment"*. On the other hand, Barnes [6] defined this benefit as the capability of having data communication anytime and anywhere as long as under network coverage. Similarly, Zimmermann [61] suggested that new services or new cost saving business processes will be enabled by the development ubiquitous networks and embedded devices. Wolf and Heinonen [58] and Jarvenpaa et al. [23] reported that the implementation of some mobile technologies in the organizational domain generated a fairly high level of user expectations – based on false assumptions that this technology would enable them to "do anything, anywhere, anytime". Finally, Westelius and Valiente [57] noticed that besides the high level of expectations it also produces a high level of uncertainties among staff – perhaps caused by the novelty and/or the existing myths evolving around this technology. If this benefit becomes a widespread reality, users no longer have to think about the problems of establishing device networking, only its benefits.

Connectivity refers to the ability to transmit and receive data wirelessly [6,12,61]. Concomitantly, *interactivity* refers to the potential for complex information to be shared among devices, increasing systems interactivity [6,52]. Notice that most of the issues related to connectivity and interactivity have characteristics in common with flexibility and ubiquity.

At present, business benefits enabled by advances in location awareness can be considered much more of a promise than a reality in m-business [26]. Whereas expectations of business benefits enabled by location awareness are high, only a limited number of mobile applications have actually leveraged tangible benefits from this technology [19,20,29,30,46].

The eight benefits enabled by mobile business applications in the firm's value chain proposed by Barnes [6] have found support in the literature. There is clear empirical evidence that these technologies enhance business transformation, efficiency, effectiveness, flexibility and interactivity. On the other hand, ubiquity, connectivity and location awareness are mostly referred as *potential* benefits that, at this stage and remain bounded by the level of technological development.

2.2. Enterprise mobility

The use of mobile technologies can undoubtedly improve the efficiency of the members of an organization, especially the mobile workforce [5,13,22,32,41,56,57,59]. In several cases, as Jain [22] and Walker and Barnes [56] reported, mobile technologies replaced inefficient paper data entry processes and enabled the capture of complete and accurate data at the point-of-origin.

It is clear that different industries require distinct levels of mobility [5,22,39]. Enterprise mobility requirements can be generally divided in three categories [22]:

1. *Industries with high mobility requirements:* This group involves the organizational settings where users as well as the assets are moving constantly. Examples of such settings include shipping and trucking industries, some municipal government departments as well as law enforcement agencies. Although in agricultural and utility industries assets are fixed, these assets are spread over a wide geographic region and most tasks are accomplished in the field. For this industry group, mobile technologies are crucial as they liberate mobile employees from wired connections and enable them to accomplish IS supported tasks needs in a broader temporal and spatial boundary.
2. *Industries with medium mobility requirements:* This group involves the settings where users are highly mobile in a restricted perimeter and perform most critical tasks a "base" (e.g. office or kiosk). Examples of such settings include healthcare and university settings.
3. *Industries with low mobility requirements:* Users belonging to this category are rarely mobile and the support of mobile IS hardly influence the fulfillment of their tasks. An example of this setting would be a traditional office setting.

Undoubtedly, the nature of tasks accomplished by the mobile workforce involves a high level of geographically dispersed work [21,35,39,56,57]. Barnes [4,7] pointed out that "enterprise mobility" is defined by the degree to which an organization's operations and information needs, typically employee activity, are supported in a "geographically independent way". The author presented a conceptual framework for understanding the potential of mobile application in the B2E space, which he refers to as the Mobile Enterprise Model (MEM). Figure 2 shows the MEM diagram.

The axes are mobility, process and market value proposition. Notice that each axis indicates three distinct stages in relation to its dimension. Briefly, the axes can be described as follows:

Mobility describes the level of "geographic independence" of enterprise workers, enabled by the wireless data solution. The first level is "*transient*", which describes the basic support of employees as they move from one location to another. These employees are restrained by spatially bounded mobility. The second level is "*mobile*" where employees have a much higher degree of spatial independence from the enterprise, and have spatial independence for prolonged periods of time, but they inevitably return to corporate locations to perform certain functions. Finally, the highest level of mobility is "*remote*". At this level, employees are almost completely removed from the corporate location, being empowered with a very high degree of spatial independence.

Process describes the change in work configuration and processes resulting from the adoption of a mobile application. The first level, "*automation*", refers to efficiency gains in existing processes
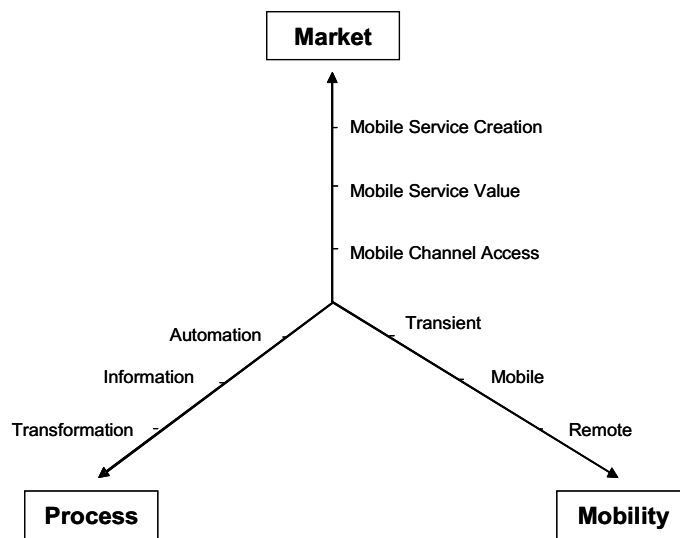
Fig. 2. Dimensions and stages of mobile enterprise model [4].

transferred to the mobile data environment. "*Decision support*" brings in a degree of effectiveness and knowledge work gains via the mobile solution. Finally, "*transformation*" describes a fundamental degree of change in organizational processes using the mobile medium. At this level, the nature of work and job roles may be transformed by the mobile medium.

Market describes the value proposition in the marketplace; typically, it refers to the alterations in products, services and relationships with customers, but it may also contain market experiences with suppliers and business partners. *Mobile channel access* – positioned at the lowest level – indicates that the mobile medium is being used largely as a conduit for information for mobile employees, without significantly different services. *Mobile service value* – positioned at the intermediate level- refers to the wireless solution is being used to add significant value to the market offering. There are specific areas where the product or service level is being significantly enhanced using mobile distributed work. *Mobile service creation* – positioned at the highest level, indicates that the wireless medium is being used to create entirely new service offerings or products.

Some of the concepts regarding business transformation presented in the MEM were also captured by Basole [13]. In addition, a few researchers applied the MEM to case studies and provided some insights on B2E mobile work solutions [4,21,56]. Three major phases in the use of mobile distributed work in organizations were identified:

Phase I: Mobile employee linkage. This phase of enterprise mobility focuses on establishing the appropriate wireless infrastructure to "link-in" transient employees, enabling access to corporate data and improving the efficiency of existing work.

Phase II: Mobile employee empowerment. In this phase, the work patterns of employees are driven by the availability of corporate knowledge via the mobile medium. In this stage, mobile employees are able to significantly improve the effectiveness of work configurations and therefore of the products or service provided.

Phase III: Mobile enterprise creation. Only in this highest phase of enterprise mobility can the organization boast truly mobile employees and services. At this level, employees can exist separately of the geographic constraints of an organization, supported by wireless solutions. The nature of

Table 2
Exploring enterprise mobility in New Zealand

Study	Focus	Type
Barnes and Scornavacca [10]	Assessment of Wireless Applications Used by New Zealand Business	Multiple Case Study and Survey
Walker and Barnes (2005)	Wireless Sales Force Automation in New Zealand	Multiple Case Study
Barnes, Scornavacca and Innes (2006)	Wireless Field Force Automation in Trade Services	Dual Case Study
Scornavacca and Herrera (2007)	Mobile Technologies in the New Zealand Real-Estate Industry	Multiple Case Study

work has been significantly transformed to take advantage of the new environment, and the roles of individuals are likely to be very different. In addition, the mobile enterprise is able to offer new and different products and services.

Most of the case studies found in the literature relating the mobile enterprise could be classified as belonging to second phase – mobile employee empowerment [2,4,13,21,22,33,35,36,38,57].

3. Evidence from New Zealand

In this section, the findings of four New Zealand based studies are examined in more detail [10,11, 48,56]. These studies are a result of an ongoing research program at Victoria University of Wellington. The results presented below are based on primary data collection. On each research project the Mobile Enterprise Model (Barnes 2003; 2004) was used as a framework of analysis. A summary of the research projects are given in Table 2.

3.1. Assessment of wireless applications used by New Zealand business

Barnes and Scornavacca [10] assessed the perceived strategic value of wireless applications use by New Zealand Business. Over 120 companies using wireless applications were identified in that study. In addition, the authors found more than thirty wireless application developers based in New Zealand. The sample was dominated by organizations utilizing mobile phones and laptops. Nearly all had mobile phones with text, a technology that has reached saturation, while more than three-quarters had phones with an Internet browser. More than 80 percent of respondent organizations were using laptops with wireless access to the principal operator networks, typically using a PC-card, while only around a third were using short-range wireless access, such as via WiFi. PDAs and smart phones with wireless access played a significant role, with around 70 percent and 50 percent of the sample respectively. Satellite navigation and RFID were less well represented, since these technologies tend to be dependent on application area; for example, navigation devices are concentrated in logistics applications while RFID-type devices are currently largely being used for asset management, tracking and supply-chain management.

The findings suggest that 72 percent of mobile business applications in New Zealand are used in a B2E and B2B context. In addition, it was found that the most popular mobile application used in the country is sales force automation (26%), followed by job dispatch/management (17%), asset management (9%), and remote office applications (9%). The dominant industries for mobile applications in New Zealand are manufacturing (19%), cultural and recreational services (14%), property and business services (13%), transport and storage (11%), and wholesale trade (9%) [10].

The research also has identified some of the organizational impact of mobile and wireless applications, in terms of benefits, strategic advantage, and barriers to adoption. Overall, while the mobility, efficiency and effectiveness benefits of the applications in use in the respondent organizations were clear, they typically did not allow a level of benefits associated with business transformation. Similarly, they typically did not enable the development of market value, such as in existing or new products or services for businesses. Thus, according to the MEM, the applications are clearly in the mobile employee empowerment phase.

3.2. Wireless sales force automation

Walker and Barnes [56] were using an exploratory multiple-case study methodology to examine the impact of wireless sales force technologies on three organizations in the New Zealand food industry.

> *Alpha* is a snack food manufacturer and employed approximately 800 people. Alpha's wireless SFA solution operates on a tablet PC. Sales people have the ability to receive and transmit information wirelessly using wireless data cards. Approximately 45 sales people are using Alpha's wireless SFA solution.
>
> *Beta* is the wholly-owned and independent subsidiary of a grocery distribution co-operative. They are the largest single source supply food service and route trade grocery wholesaler in the Lower North Island of New Zealand. Beta is a business-to-business operation. Beta's wireless SFA solution operates on laptop computers. The software is a replication of the company's internal order capture system. Sales people have the ability to receive and transmit information wirelessly via a hardwire connection to a mobile phone. Approximately 15 sales people are using Beta's wireless SFA solution.
>
> *Gamma* is a fast moving consumer goods importer and distributor with a focus on confectionary products and employed over 160 people. Gamma's wireless SFA solution operates on iPaq PDAs. Sales people have the ability to receive and transmit information wirelessly via a hardwire connection to a mobile phone. Approximately 35 sales people are using Gamma's wireless SFA solution.

The analysis of the cases was structured accordingly to the Mobile Enterprise Model [4,7].

Regarding *mobility*, all of the organizations examined have achieved and surpassed the transient level of mobility in the MEM, as the wireless SFA solutions provide more than basic support to employees as they move from one location to another. All of the solutions provide functionality that allows sales people to remain in the field for prolonged periods of time. In addition, the solutions provide sufficient geographic independence having achieved the *mobile* level of the Mobility axis on the MEM. The extent to which the organizations have reached the mobile level varies. None of the wireless SFA solutions provided sales people with enough geographic independence to be completely remote on the MEM.

The analysis of *process* identified that all of the wireless SFA solutions examined have resulted in efficiency gains in existing processes as a result of automation. Overall, wireless SFA technology has enabled improvements in the efficiency and effectiveness of sales activities. However, there is no evidence that the solutions have fundamentally transformed work configurations or processes at any of the organizations examined.

All of the factors contributing to the *market* value proposition of the solutions involve the delivery of information to employees in the field using the wireless SFA solution. All of the organizations examined have achieved the mobile channel access level of mobility in the MEM. The organizations have achieved important benefits of both mobile business and sales force automation. The solutions are providing access to real-time information at the point of need, and remote communication with back office systems. The wireless SFA solutions enabled sales people to efficiently access up-to-date information on customers,

products, stock levels, pricing and promotions. None of the organizations examined were utilizing the mobile medium to create entirely new products or services. Thus, they have not yet moved to mobile service creation in the MEM.

Overall, Walker and Barnes [56] observed that sales force and overall organizational performance improved as a result of applying wireless technologies to their sales function. Several positive impacts derived from mobile channel access providing better remote access to back office systems, more efficient provision of up-to-date information, and improved ability to communicate with sales people. However, it was found that the development of mobile solutions has been limited to the improvement of existing processes, and is quite dependent on the performance of mobile networks and bandwidth availability.

3.3. Wireless field force automation

Barnes et al. [11] investigated the impact of wireless Field Force Automation (FFA) on two New Zealand trade services organizations. The study was based on an exploratory dual-case study methodology.

Case A is a leading vehicle association in New Zealand with membership totaling over one million. The organization has both commercial and non-commercial ventures, their membership only break-down assistance service comprises of around 150 service offices. This service and its associated wireless field force automation system was the focus of the case study. The wireless FFA system on Case A is based on a touch-screen laptop computer fitted in a vehicle dashboard. It is connected via a cellular network to a central dispatch centre. Job dispatch and additional information is communicated via the laptop, which also uses global positioning system (GPS) technology to provide a visual representation of jobs as well as the real time location of each road service officer.

Case B is a Wellington based, national supplier of glass and glazing services that operates with a network of local glaziers. It provides a wide range of flat glass solutions to home and corporate customers, it also provides nation wide glazing services for an insurance company. The system studied at Case B is based around the Kyocera 7135 smart phone and cellular network. The device is provided to the glaziers, which allow job management tasks and scheduling. The backend service application is web based and is outsourced to an Auckland supplier.

Once again, the analysis of the cases was structured accordingly to the Mobile Enterprise Model [4, 7]. Figure 3 provides a comparison between the two cases.

Case A was able to reach a higher level of *mobility* with its service officers being able to perform almost all their processes from their vehicle. Case B, with its links to the provision of a tangible good has a field force that was comparatively less mobile in nature.

Both organizations were able to achieve the level of business *process* redesign. Case A is surpassed the level of information by attributing processes that were performed elsewhere to the field force. On the other hand, the processes of Case B remained unchanged in most aspects but some capabilities are added such as for the ordering process.

The services were fairly equal in terms of the *market* axis. The addition of sales and marketing tasks to the service officers and the links to corporate customers were working towards creating more value for the organization. Case B's value came from the ties to the insurance company, which the backend of the system helped secure, and the exploration of selling the system design to other trade service organizations.

Overall, despite the two organizations differing markedly in size, business model, and operations, they both experienced similar levels of benefits derived from the implementation of wireless FFA systems.
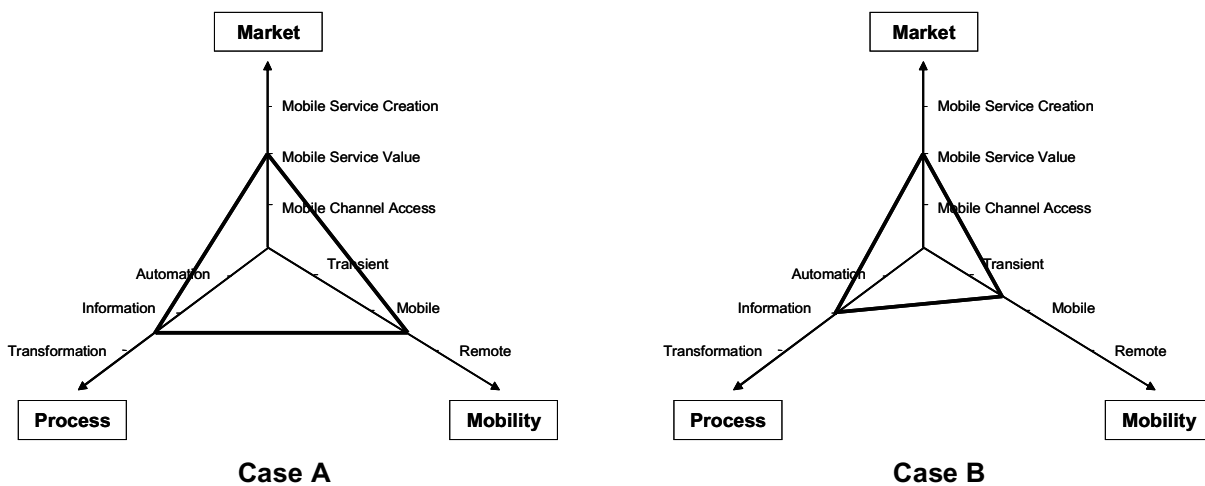
Fig. 3. Comparison of mobile field force automation [11].

3.4. Mobile technologies in the real-estate industry

Scornavacca and Herrera [48] investigated the perceived strategic value of mobile technologies in the New Zealand Real-estate industry. The Real-estate industry plays a significant role in a country's economy. Traditionally, the industry has made its contributions through the ability of handling and transferring Estate specific knowledge and information. This traditional model is being challenged by the threat of disintermediation, brought on by the emergence of new technologies, like the Internet.

The study followed a multiple qualitative case study method. In order to capture different perspectives within the industry, a total of six organizations were selected were for this study: one representing the industry association (participant 1), another representing a telecommunication provider (participant 2) and four organizations representing Real-Estate agencies (participants 3–6).

The Mobile Enterprise Model [4,7] was used for the analysis of the cases. Figure 4 provides a comparison of distinct perceptions among the participants. Participants 1 and 2 are represented by the solid line while participants 3–6 are indicated by the dashed line. It is clear from the illustrations that participants 1 and 2 have a more positive perception of the strategic value of mobile technologies.

It was found among the participants distinct perception in regards to *mobility*. Participants 1 and 2 believed that the level of geographic dependence for the agents is extremely low and salespeople have the ability to be almost completely removed and independent from the office. Mobile technologies can provide agents with remote linkages into corporate information systems allowing higher degrees of freedom form the office. However, from the branch manager perspective, mobile technologies are allowing salespeople to have geographic independence for prolonged periods of time – however there is still a need of "a base of operations" for a number of business processes.

Within *process* the NZ Real-estate industry appears to have barely reached the "information level". Developments such as the use of mapping systems to enable remote agents to access and display properties images as location could certainly support the existing processes and improve service delivery.

Regarding the market axis, participants 1 and 2 did see the potential for mobile applications to allow mobile service creation, using them to create entirely new services. However, participant 1 felt that such development may be not valued by agents. The branch managers focused on mobile channel access.
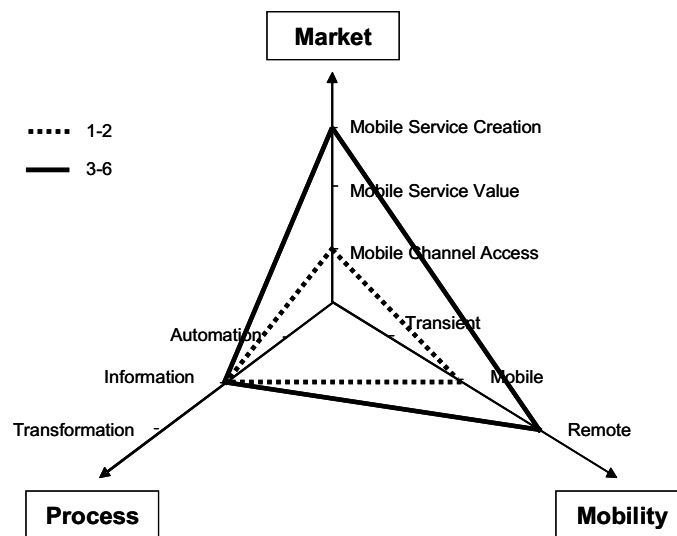
Fig. 4. Comparison of mobile field force automation [48].

However they expressed some indication of the value that new mobile services may have to their business and to gains of competitiveness.

Scornavacca and Herrera [48] found that despite the wide availability in NZ of advanced mobile technologies such as laptops with wireless capabilities, PDAs' and smart-phones, most agents are only using standard mobile phones for voice communications. The prevailing perceived business benefits derived from the ability to access the mobile channel in order to gain efficiency and improve customer service. However, there were challenges such as cost, network coverage, the identification and development of industry specific mobile application as well as nurturing partnerships across the industry value chain.

Although there was agreement that mobile technologies can enhance business processes, Scornavacca and Herrera [48] noticed a strong perception that the 'qualities of a salesperson' cannot be changed or assisted effectively through the utilization of mobile technologies. Some perceptions indicate that many agents believed that relying too much on technology could be risky. In addition, there was a clear belief that the salesperson's role is about building networks and relationships with clients and associates. Therefore the perceived strategic value and enthusiasm for adopting mobile technologies could be diminished by long standing traditions and business practices of the Real-Estate industry.

4. Conclusions

The wide spread adoption of wireless technologies is providing an unprecedented platform for business to leverage the benefits of mobility. This paper aimed to explore the strategic value of enterprise mobility in New Zealand. In order to achieve this goal, it provided an overview of the literature related to mobile business applications in the work domain and highlighted the findings of four recent studies undertaken in New Zealand.

The four research projects have provided an interesting picture of the use and strategic value of mobile technologies in NZ business. Most of the business benefits found in the studies were related to employee integration and individual performance improvement instead of product, service or organizational improvement.

Using Barnes' MEM as a framework to analyze the development of mobile distributed work and to benchmark the status of the concept in each organization, it was found across the four studies that most of the organizational focus has been predominately upon the process and mobility dimensions, rather than the market dimension. Among the three dimensions, mobility was the most highly rated dimension, and it is clear that applications did go beyond the transient employee, or temporarily mobile individual – providing significant integration of remote employees into the corporate infrastructure. The topography of New Zealand provides a significant challenge to complex communication and organizational integration; mobile and wireless applications appear to be making headway in this regard and this is emphasized in the results. Process was also seen as a significant area of impact. Many applications were focused on automating existing processes to make them faster and more efficient, with productivity being a primary goal. Job dispatch and sales force automation were typical examples. However, there was little evidence that the applications were providing transformation of business processes. Moreover, there is little indication that the applications had any impact on the value proposition.

Overall, regarding the three major phases in the use of mobile distributed work in organizations, all companies studied were clearly in the mobile employee empowerment phase. As a consequence, existing wireless applications in New Zealand have some way to go before it reaches the third phase - mobile enterprise creation. The corollary of this is that there exists significant scope for mobile enterprise applications to provide considerably more benefit for their organizations.

Any future research must continue to build on further developments in this fast-moving field of application and research. Time will tell which wireless technologies or applications become ubiquitous and dominant. However, it is clear that enterprise mobility has an important part to play in the IT strategies of many organizations.

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