Mobile business: An exploratory study to define a framework for the transformation process

Tsai, Heng-Sheng (Aaron Bond) and Gururajan, Raj

Department of Information Systems

University of Southern Queensland

Toowoomba, QLD 4350

Tel: + 61 7 4631 1834

Fax: + 61 7 4631 5594

Correspondence email: gururaja@usq.edu.au

Topic area: e-business

Mobile business: An exploratory study to define a framework for the transformation process

Abstract

The advent of frontier technologies such as wireless technology has given the necessary impetus for businesses to transform from traditional ways into digital ways. While the Internet transformed traditional businesses to e-businesses, wireless technology enabled to move further to mobile business or m-business. Despite the development in the technical domain, businesses still struggle to comprehend the processes involved in the transformation and a proper framework is yet to evolve. This work-in-progress paper provides a background to such transformation with a method to achieve this transformation.

Introduction

Research firms such as Shop.org and Forrester Research, based on the growth rate of on-line retail sales, estimated that $100 billion has been achieved in 2004, representing 4.5 percent of total retail sales. Business-to-business (B2B) e-commerce is expected to grow worldwide to $4.3 trillion by 2005 according to International Data Corp (IDC) (Lumpkin and Dess, 2004). Due to the advent of wireless technology, it is believed that parts of e-commerce will take place through wireless devices (Zabala, 2000), and create a large market for many industries because wireless technology offers mobility and flexibility. The mobile Internet is transforming employees, supply chains, and customer interactions by facilitating new innovations, cost-reduction, and revenue opportunities (Kalakota and Robinson, 2001). For example, PDAs support a wide variety of enterprise-level applications in fields ranging from industrial manufacturing to the airline industry to healthcare, and business and personal productivity applications range from document readers to street maps and vacation planners (Kumar and Zahn, 2003). Carlsson (2002) indicates that cyber economy will combine traditional business with new e- and mobile business, and will be driven by a new breed of online customers, who operate both wired and wireless networks, who will expect fast delivery, easier transactions and more fact-based information.

It appears that mobile (m-) commerce is not included in the traditional e-commerce market models despite that fact that m-commerce will be able to increase the overall market for e-commerce, because of its unique value proposition of providing easily personalized, local goods and services anytime and anywhere" (Durlacher Research Ltd, 2000; Clarke, 2001). A reason for this may be due to the fact that mobile commerce followed e-commerce models and the lag in time. While discussing about e-business success factors, Porter (2001) argued that companies that use the Internet in conjunction with their traditional business models will improve their activities leading to success and the same argument can be applied to m-business as well. Therefore, it is important to provide an effective and efficient framework for

businesses to move into m-businesses.

It appears that most current studies mainly focus on the issues of wireless technology due to infancy of mobile technology in the business domains. Although mobile technologies can be helpful on internal business processes, there is little information available on the guidelines of mobile business transformation (Carlsson, 2002; Holliday et al, 2002). This has given the basis for this research.

Literature review

Literature review in the area of mobile commerce or m-business can be divided into six parts: (1) definitions of m-commerce and m-business, (2) limitations and characteristics, (3) business models and value chain, (4) reasons of transforming into m-business, (5) transformation framework and guidelines, (6) challenges for m-business development. This study provides details of some aspects of these six parts.

Definitions of m-commerce and m-business

There are many definitions available for m-business and m-commerce. For instance, mobile e-commerce transaction is defined by Tsalgatidou and Pitoura (2001) as 'any type of transaction of an economic value that is conducted through a mobile terminal that uses a wireless telecommunications network for communication with the c-commerce infrastructure'. Liao et al. (1999) define mobile commerce as '… involves the delivery of products and services via wireless technologies to enable e-commerce activities without restrictions of time and space'. Clarke (2001) states 'mobile e-commerce, commonly referred to as m-commerce, is the ability to purchase goods anywhere through a wireless Internet-enabled device'. Terziyan (2002) defined mobile e-commerce as 'a business transaction of an economic value that is conducted using a mobile terminal that communicates over a wireless telecommunications or personal area network with the e-commerce infrastructure'. Kalakota and Robinson (2002) claimed that m-business should combine Internet, wireless technologies, and e-business indicating that m-business includes aspects of information, services, and products with mobile devices on wireless network infrastructures.

Potential and advantages of mobile commerce

The distinction of m-business from e-business is based on the on the value proposition attributes of ubiquity, convenience, localization and personalization (Clarke, 2001). While e-business provides convenience and personalization to some extent, m-business, due to the technology, provides specific advantages of mobility and localization. The ubiquity of m-businesses is derived from the mobile devices that offer users the ability to receive information and perform transactions from virtually any location on a real-time basis. The advantages presented from the omnipresence of information and continual access to businesses will be exceptionally important to time-critical applications. Convenience is realized in terms of agility and accessibility

provided from wireless devices.   This also allows m-businesses to differentiate its abilities from e-businesses. Localization of m-businesses is in terms of knowing the location of the user to create a significant advantage so as to leverage location-specific information by supplying information relevant to the current geographic position of the user.   Personalization is achieved by making mobile devices ideal for individual-based target marketing. It offers the opportunity to personalize messages to various segments, based upon time and location, by altering both sight and sound.   When these four elements are combined, the potential to improve the activities of a business becomes enormous.

The reasons for transforming into m-businesses

The main question that this study aims to answer is 'Why should businesses pay attention to mobile commerce now?'.   There is skepticism that the wireless technology as applied to business is still in infant stages.   Further, businesses still encounter problems with e-business models and a number of issues such as e-signatures are yet to be comprehensively addressed. The greatest advantages businesses can derive from wireless technology include operational efficiency and customer interaction. Even in its current nascent stage, m-business can enhance business efficiency by distributing information to the workforce remotely, and offering new channels on which to interact with customers (Kumar and Zahn, 2003). Clarke (2001) provides supporting evidence by stating that: 'Industries that are time sensitive, such as financial services and travel, are likely to benefit from businesses exploiting this value-added feature of mobile commerce. For example, alert notifications services, such as for auctions, betting, and stock price changes, which are specified by the user as an important part of relevant personal content'.   He further states that 'The convenience of m-commerce offers tremendous opportunities to expand a client-base by eliminating some of the customers' labor of life's activities'. By making services more convenient the customer may actually become more loyal'.

Mobile technology can enhance the business value by making the activities more convenient and efficient in four related value-adding continuum that are being revolutionized by the Internet. They are Internet—search, evaluation, problem-solving, and transaction (Lumpkin and Dess, 2004).   However, to accomplish these four, businesses need to transform to m-business from their current position properly and smoothly (Phan, 2003).   A compelling reason to do so includes the potential and growing market creating by mobile users and the huge benefit offered by these mobile customers.

The mobile business transformation framework

If the mobile trend is irresistible, then what are the important issues, and how can we make the adoption process smoother and less painful?   As Kalakota and Robinson (2002) declared, when we develop the mobile framework, it is imperative that mobile solutions build on top of the e-business investments.   We examined the available models in e-business domain and found the following two models suitable for m-business transformation.   A brief summary of the two

models are discussed below.

Models suitable for m-business transformation

This study examined the model provided by Thomas M. Siebel (2001), the CEO of Siebel System, for introducing m-business strategy. This model is developed from hundreds of cases which use Siebel's e-business system, and gained obvious success in their companies. These steps are:

1. Analyze current situation, create the e-business vision.

2. Design multi-channel strategy for the vision.

3. Action plans development.

4. Introduce and launch e-business system.

5. Evaluate, monitor and trace the e-business strategy.

Further more, there are 8 reference principles to follow in introducing processes associated with the five steps stated above:

- Understand the customers

- Provide multi-channel contact experience

- Give customer personal experience

- Make the best use of each customer's value

- Focus on the best customer satisfaction

- Develop and maintain a global, customer-centric e-business architecture

- Utilize and expand e-business ecosystem

- Cultivate excellent and innovative business culture

On the other hand, the model proposed by Kalakota and Robinson (2001) contained following 4 steps.

Step1: Self-diagnosis

Before embarking on your journey to create an e-business design, you must first assess the impact of recent customer, business, and technological on your company by asking the following questions.

- Has the recent wave of technological innovation created new ways of doing business and reorganizing priorities within your firm?

- Is your company responding to changing customer expectations? Is it aware of the dimensions of value that your customers care about?

- Is your company willing to question and to change countless industry assumptions to take advantage of new opportunities while also preserving existing investments in people, applications, and data?

- Is your company successful at lowering operating costs while making complex business applications adaptive and flexible to change under the relentless pressure of time to market?

According to the answers, companies can be classified as market leader, early adopter/visionary, or silent majority. These questions can help managers understand the position of their company.

Step 2: Reverse the value chain

Businesses must redefine themselves in times of flux, a danger for companies married to a business definition that is fixed to specific products. By defining new product and service offerings, based on a continuous sensitivity to customer needs (see Figure 5).
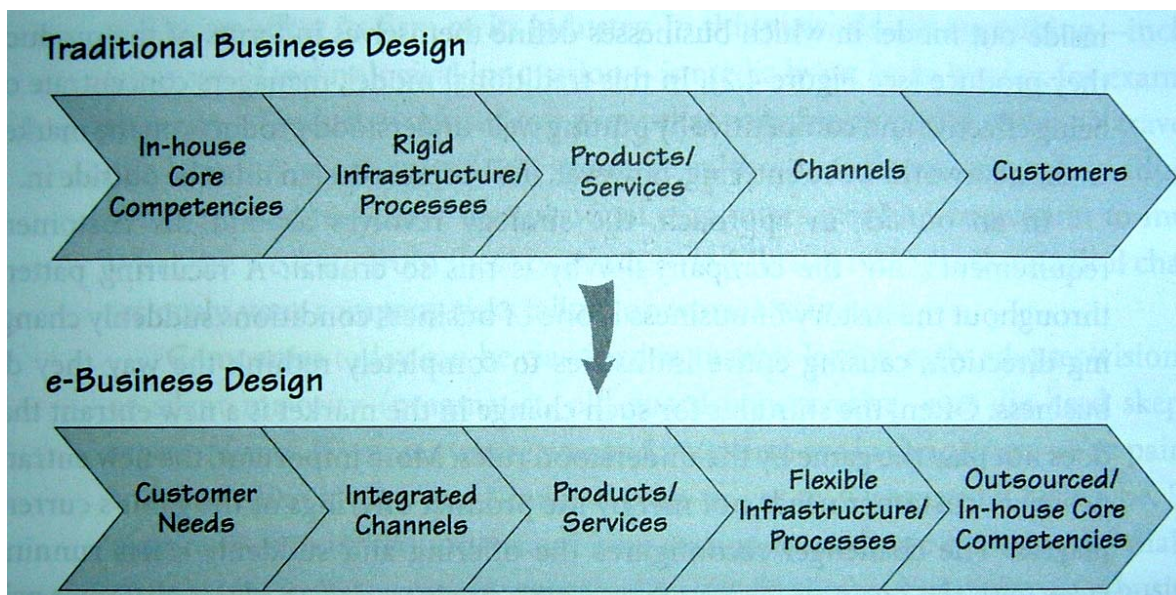

Figure 1 Reversing the value chain (Kalakota and Robinson, 2001)

Step 3: Choose a focus

In order to narrow its circle of competence, a successful firm chooses one of the following types of focused excellence.

- Service excellence: Delivering what customers want with hassle-free service and superior value.

- Operational excellence: Delivering high-quality products quickly, error free, and for a reasonable price.

- Continuous-innovation excellence: Delivering products and services that push performance

boundaries and delight customers.

To succeed, a company's e-business design must be focused.

Step 4: execute flawlessly.

Once the tough decisions are made, the next step is how to move from the current position to the goal, and how to integrate the legacy infrastructure to meet new e-business requirements? Some companies, such as American Express, Dell, and Cisco, have been the successful examples.

The design job of m-business transformation framework should also absorb the previous knowledge obtained from e-business adoption, and then take the advantages and characteristics of m-business into account. Certainly, the job is not as easy as just putting 'mobile' in front of each term. Integration of the Internet with mobility will require a re-engineering of billing platforms (Kalakota & Robinson, 2001). Kalakota and Robinson (2002) warn that mobile Internet is in its infancy and there are no real framework available that can provide a systematic way to think about opportunities or problems t facilitate transformation.

After two years of continuous evolving, the landscape of m-business is clearer than before. Therefore, it is possible to construct a framework and action guidelines for companies that want to transform to m-business. There are three key issues that need to be considered while transforming to m-business (Clarke, 2001):

- Innovation and customer value.

- Profitable business models.

- Focus and leadership.

Clarke also believes that prudent managers may select to ask the following questions prior to offering an m-business application.

1. What is the value proposition provided from this wireless technology?

2. What market segments are best able to monetize this value proposition?

3. Does this application have potential to become a 'killer app'?

4. Is this value proposition congruent with other wireless applications currently provided?

Success will depend on the ability to integrate e-competencies of current business models with the unique features of m-commerce. Long term m-commerce business success is likely to come from consumer-oriented, rather than technology-based strategies (Clarke, 2001).

The future challenges

Many studies have addressed the difficulties and challenges for mobile commerce and the development of m-business. For examples:

- Michael Porter (2001) has emphasized that Internet technology becomes strategically significant only when its practical application creates new value.

- Kalakota and Robinson (2002) think customer value creation will most likely occur in five solution phases based on continuous improvements in mobile technology. These phases are messaging, info-connectivity, transactions, transformation, infusion.
  Mobile companies today are in Phase 1. How quickly and completely the mobile Internet is adopted and used will be determined by how well the software applications it provides meet real customer needs.

- If the phones are too expensive, if the telecom companies charge too much per minute, if the vendors' price their goods and services too high for impulse and convenience buying, then the cell phone may not turn into a product development success story (Kumar and Zahn, 2003).

- Decision makers have a difficult task in assessing the range of proposed business models in order to determine those that are most suitable (Hayes and Finnegan, 2005).

- For those have transformed into e-business, the implications for managers failing to develop effective consumer-oriented m-commerce strategies may include: wasting company resources chasing the ever changing technological environment, consumer alienation, and erosion of e-commerce market share (Hayes and Finnegan, 2005).

Based on the literature reviewed, the following research objectives have been developed as the basis to study the transformation of business to m-business.

Research questions

- What are the suitable ingredients to develop a model for m-business?

- What are the challenges facing businesses while transforming to m-business from their current stage?

- What factors impact the development of an effective framework in the transformation process?

- What are the efficient strategies in realizing an m-business transformation?

Initial research model

The review of the literature and the two specific model discussed earlier indicated that there are no appropriate model available to transform businesses from their current stage to m-business. While the previous models are useful starting points, they relate predominantly to e-businesses. As explained earlier, m-business is different from e-business and hence there is a necessity for a new model to transform businesses to this stage.   An initial provisional model is derived from available literature for further refinement and testing as shown in the following diagram:
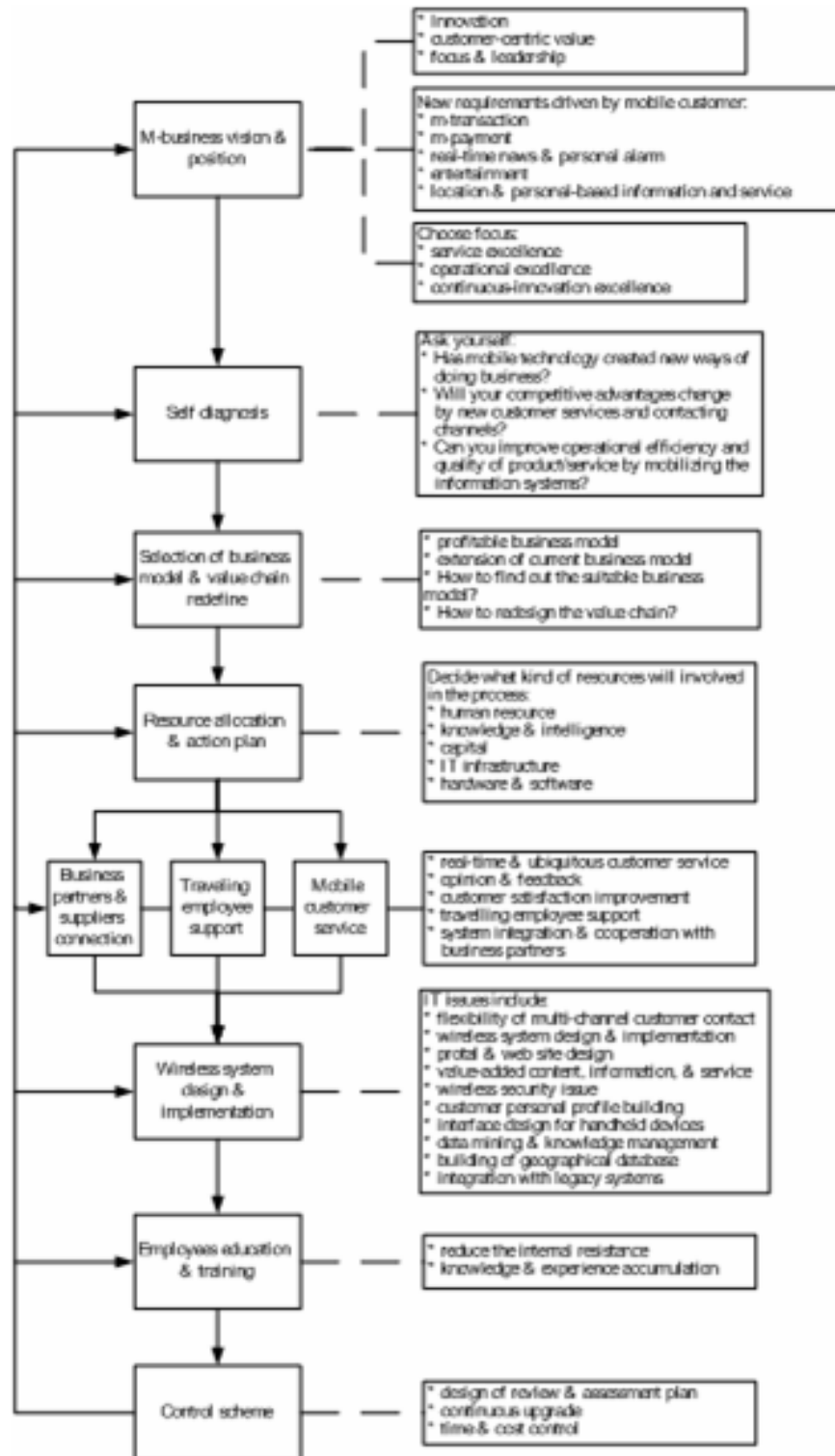
Figure 2 Initial research model

Research Framework of this study

The research now is in the stage of exploratory study. The objective of this phase is to construct a reference transformation framework for businesses that stand in the crossroad of new

m-commerce wave. The conceptual framework will build on the base combining knowledge and experience of previous studies, case investigations, and industrial forerunners. Once this is accomplished, a case study approach will be followed to gain business perspective to refine the initial transformation framework. The third step in the process is administering a survey. Once the survey is completed, an efficient and effective framework and guidelines for m-business transformation can be built for businesses, and making the transformation process successful.
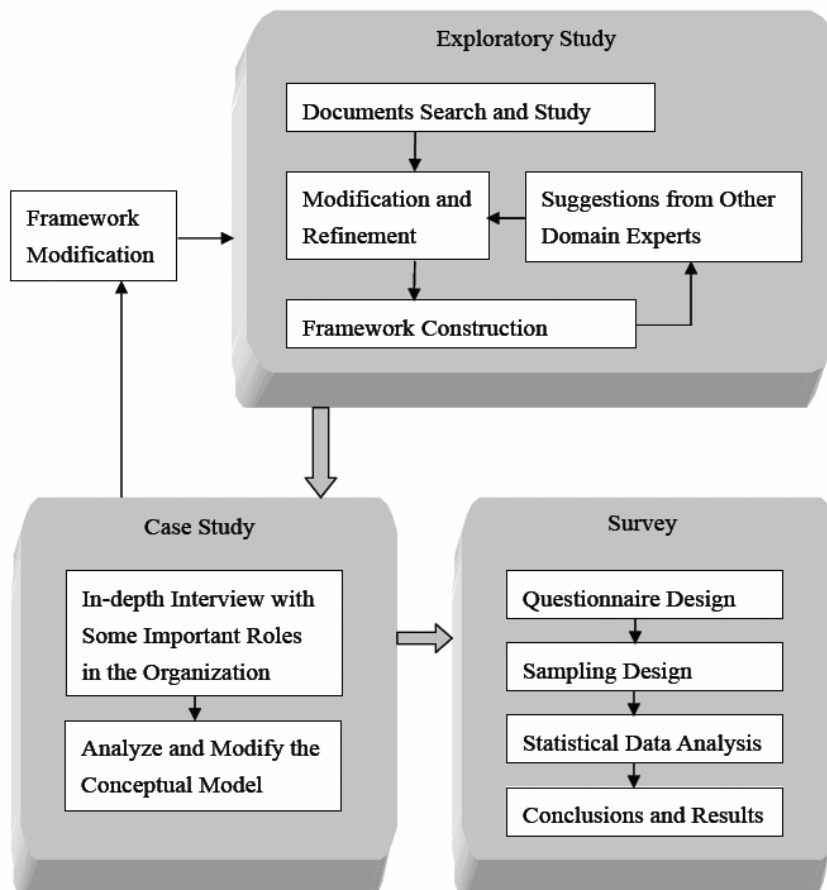
The research steps are listed in Figure 2.

Figure 3 Research framework of this study

Research Methodology

This study combines conceptual and empirical research methods. Conceptual research mainly focuses on the development of framework (step 1). On the other hand, empirical research emphasizes the findings of practical knowledge and successful experience relating to the m-business transformation process (step 2 & 3). In this part, case study and survey will be used.

References

Carlsson, Christer (2002), Decision Support in Virtual Organizations: The Case for Multi-Agent Support, Group Decision and Negotiation 11, 185-221.

Clarke, Irvine Iii (2001), Emerging Value Propositions for M-Commerce, Journal of Business Strategies, Vol. 18, Iss. 2, 133-148.

Durlacher Research Ltd (2000), Mobile Commerce Report. [http://www.durlacher.com]

Hayes, Jeremy, & Pat Finnegan (2005), Assessing the Potential of E-Business Models: Towards a Framework for Assisting Decision-Makers, European Journal of Operational Research 160, 365–379.

Holliday, Joanne, Divyakant Agrawal, & Amr El Abbadi (2002), Disconnection Modes for Mobile Databases, Wireless Networks, 8, 391-402.

Kalakota, Ravi, & Marcia Robinson (2001), E-Business 2.0: Roadmap for Success, Addison Wesley.

Kalakota, Ravi, & Marcia Robinson (2002), M-Business: The Race to Mobility, McGraw-Hill.

Kumar, S., & C. Zahn (2003), Mobile Communications: Evolution and Impact on Business Operations, Technovation 23, 515–520.

Liao, S., Y.P. Shao, H. Wang, & A. Chen (1999), The Adoption of Virtual Banking: An Empirical Study, International Journal of Information Management, 19, 1, 63–74.

Lumpkin, G.T., & Gregory G. Dess (2004), E-Business Strategies and Internet Business Models: How the Internet Adds Value, Organizational Dynamics, Vol. 33, No. 2, 161–173.

Phan, Dien D. (2003), E-Business Development for Competitive Advantages: A Case Study, Information & Management 40, 581–590.

Porter, Michael E. (2001), Strategy and the Internet, Harvard Business Review, Boston, Mar, Vol. 79, Iss. 3, 63-77.

Siebel, Thomas M. (2001), Taking Care of E-Business: How Today's Market Leaders Are Increasing Revenues, Productivity, and Customer Satisfaction, Doubleday.

Terziyan, Vagan (2002), Ontological Modeling of E-Services to Ensure Appropriate Mobile Transactions, International Journal of Intelligent Systems in Accounting, Jul-Sep, 11, 3, 159-172.

Zabala, H. (2000), M-Commerce, The Next Big Thing? Asian Business, June, 34-35.