

## **Mobile solutions for aged care: A transformation framework**

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### **Abstract**

There is renewed interest in mobile technologies in aged care. While the technologies themselves emerged some decades ago, it is only now that some of the barriers to adoption are being overcome and implementation is seen as more practical and cost-effective. The interest in mobile technologies in aged care stems from the expectation that they will assist integration of information into clinical practice, and particularly for assisting clinicians at the point-of-care. Desktop-based systems have not been well adopted by hospital doctors and mobile technologies may better suit the work-practices of these and other mobile clinicians. There are expectations of efficiency gains from the introduction of mobile technologies in aged care.

There is significant work to be done in developing the convincing business case for investment, applying project management rigor, preparing user interfaces, reviewing work-practices and otherwise exploring the changes and benefits of the technologies. Other issues to be explored include integration into the legacy environment, privacy and security. What is influencing the slow uptake of mobile solutions, especially in aged care, appears to be a framework to transform current business practices that are conducive to mobile business models. This research in progress paper provides an initial introduction to m-health, then analyses few existing e-business models and proposes framework that can transform current aged care businesses into an m-business. The paper also outlines a method to test the m-business transformation framework.

Keywords: m-health, m-business, transformation, e-business

### **The promise of m-health**

There are now new wireless and mobile technologies including user devices, bandwidth at acceptable speeds and a range of other features not available or of limited availability with previous technology. For instance, 3G connections enable users to access a wide variety of digital information, including music, video, television, high colour display, video and audio streaming, video-conferencing and electronic payment. 3G Mobile Phone Services are expected to offer voice services, m-Internet service, on-line interactive video, quality images, data service, m-commerce, m-payments m-infotainment and location-based GIS services. Services such as these are expected to provide significant advantages to aged care.

Access to health information specific to aged care is already a significant component of existing Internet traffic. Mobile access will facilitate remote monitoring, follow up, prevention, remote assistance, diagnostics, m-prescriptions and patient access to their records. Caregivers will be able to integrate information at the bedside or point-of-care with those existing in the system to deliver the best care. This will be delivered through simple, flexible, personalized and secure connectivity for doctors, nurses, administrative staff and for patients and their families.

By providing timely patient information such as diagnostic services and treatment results to practitioners through wireless connection at the point of care or wherever else is convenient, it is expected to save practitioners' time and effort spent on reviewing patient records on paper. It will enable faster, more accurate patient assessments and offers more effective and timely delivery of care.

Integrated health care delivery systems need to be patient centered. Individual risk assessment and treatment planning can be facilitated through technology. Systems need to enable efficiency improvements and enable integration of research evidence into diagnosis and care delivery. Information must be available on-demand at the clinical decision point across the whole system and the clinicians must have access to relevant aspects of the health record through fixed and wireless devices. Recent advancements in mobile technology make adoption of

this technology a little easier. Wireless speeds and bandwidth is now acceptable, security is being addressed and the technical connectivity is increasingly integrated into laptop computers, PDAs and other devices.

### **The reasons for aged care transforming into m-businesses**

A question that this study aims to explore is 'Why should aged care consider mobile commerce now?' There is skepticism about the readiness of wireless technology for adoption into aged care. There is anecdotal evidence that adoption of wireless technology can be challenging. The advantages offered from wireless technology include operational efficiency and customer interaction. Even in its current nascent stage, aged care can enhance efficiency by supporting their mobile workforce, and potentially offering new channels on which to interact with external stakeholders such as GPs, pharmacies, patients themselves and their families and carers Kumar and Zahn, 2003. Clarke 2001 provides supporting evidence by stating that: 'Industries that are time sensitive, such as aged care services, are likely to benefit from businesses exploiting this value-added feature of mobile commerce. 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 value by making activities more convenient and efficient in four areas. These are information-searching, evaluation, problem-solving, and transaction Lumpkin and Dess, 2004. However, to accomplish these four, organisations need to transform to m-business in a managed process Phan, 2003. A compelling reason to do so includes the potential and growing aged care market and the huge benefit offered by technologies to this market.

### **The mobile transformation framework**

If the mobile trend needs to be considered, 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 existing IT investments as this may be a dictating factor due to severe financial restrictions encountered by aged care service providers to date. A model proposed by Kalakota and Robinson 2001 contained following 4 steps.

#### **Step1: Self-diagnosis**

Before embarking on the journey to create an wireless design, one must first assess the impact of recent customer, business, and technological on the organisation by asking the following questions.

- Has the recent wave of technological innovation created new ways of doing business and reorganizing priorities within the organisation?
- Is the organisation responding to changing customer expectations? Is it aware of the dimensions of value that the customers care about?
- Is the organisation willing to question and to change industry assumptions to take advantage of new opportunities while also preserving existing investments in people, applications, and data?
- Is the organisation successful at lowering operating costs while making complex aged care applications adaptive and flexible to change under the relentless pressure of time to market?

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

#### **Step 2: Reverse the value chain**

Organisations must redefine themselves in times of change by defining new product and service offerings, based on a continuous sensitivity to customer needs as shown below.

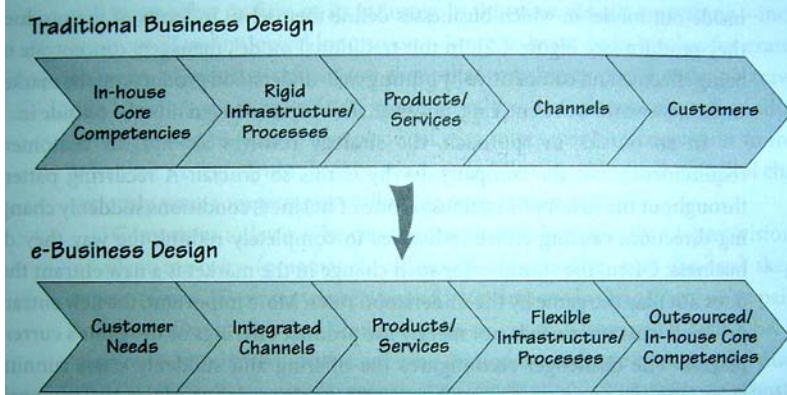


Figure 1 Reversing the value chain Kalakota and Robinson, 2001

### Step 3: Choose a focus

In order to narrow its circle of competence, a successful organisation 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 organisation's e-business design must be reviewed for efficiency improvements.

### Step 4: execution

Once 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 information requirements.

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 also warn that mobile Internet is in its infancy and there are no real frameworks available that can provide a systematic way to think about opportunities or problems to facilitate transformation.

There are three key issues that need to be considered while transforming to m-business Clarke, 2001:

1. Innovation and customer value.
2. Profitable business models.
3. 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 example:

- Michael Porter 2001 has emphasized that Internet technology becomes strategically significant only when its practical application creates new value.
- Kalakota and Robinson 2002 believe 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 and infusion. Mobile companies today appear to be 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 perceived as too expensive, if telecommunication charges too high, or if the vendors' price their goods and services too high for impulse and convenience buying, then the cell phone may not become a successful urn product development platform 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 organisation 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.

### **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 aged care providers from their current stage to m-business. While the previous models are useful starting points, they relate predominantly to e-businesses. As indicated 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 Figure 2.

### **Research Framework to accomplish the framework**

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 3.

### **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 methods will be used.

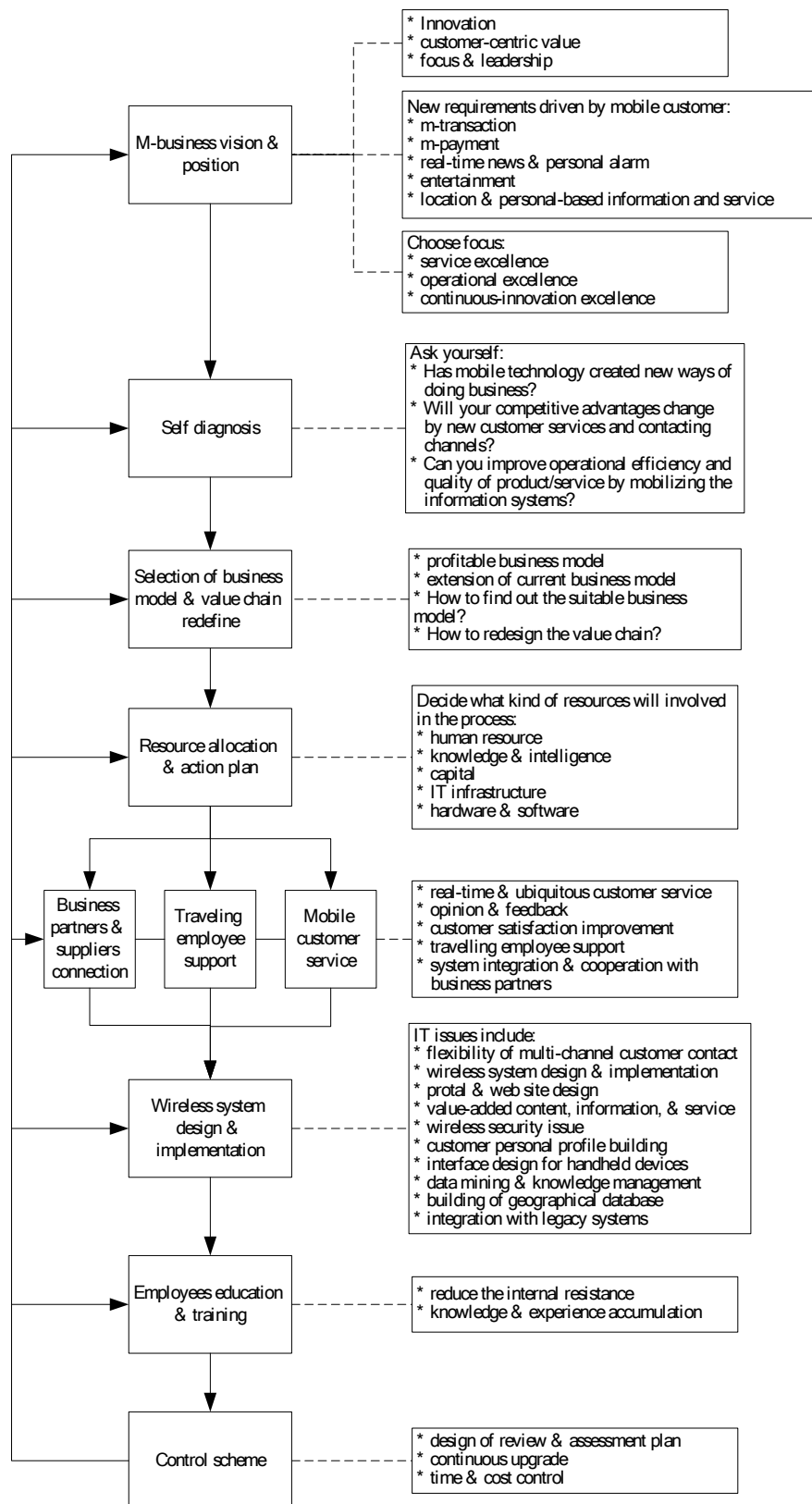


Figure 2 Initial research model

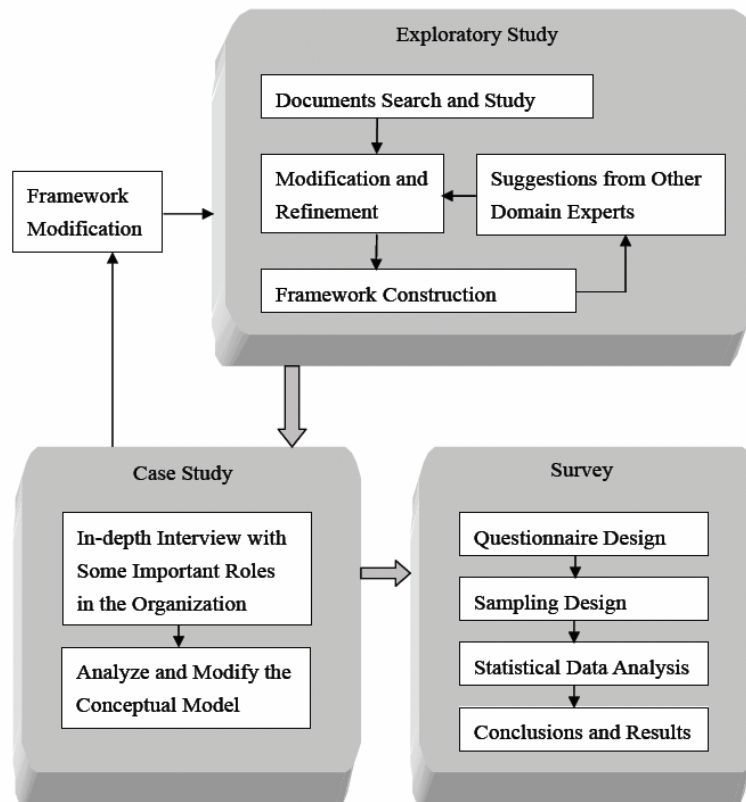


Figure 3 Research framework of this study

### **Summary**

It is timely to consider wireless in aged care. Barriers such as speed and bandwidth are being overcome and the technology is increasingly embedded in devices such as laptops and PDAs. There may be particular advantages in older buildings where savings from wireless on the cost of cabling might be significant. A major potential advantage is that mobile connectivity might be more suited to the work-practices of aged care staff who are more likely to be continually moving to provide care.

There is significant work to be done in developing the convincing business case for investment, applying project management rigor, preparing user interfaces, reviewing work-practices and otherwise exploring the changes and benefits of the technologies. This paper outlines research in progress to develop a framework for considering wireless in aged care.

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