The Impact of Wireless Data Technologies in New Zealand: A Study of New Zealand Small and Medium-Sized Enterprises

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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 the business. Such applications are able to take advantage of a new paradigm of mobility for data services, with the ability to sensitize to location, time and personal features. While big business has been a central feature of wireless implementation, it is now clear that small- and medium-sized enterprises (SMEs) are beginning to take advantage of the strategic benefits of wireless data communications. This study examines the state-of-the-art of wireless data services in New Zealand. It provides a survey of 127 current applications in use, as well as two short illustrative cases of application use. The paper rounds off with a summary and conclusions.

Introduction

The convergence of wireless telecommunications and the Internet provides many exciting new possibilities for mobile networks. On their individual merits, the penetration of each technology in the developed world has already evoked changes in our daily lives – how we work, live and learn. Combined, the potential impact of the wireless Internet and related applications is immense. Until now, the literature on applications of the wireless Internet has predominantly focused on business-to-consumer markets, following the patterns in the media and e-commerce research. Notwithstanding this, it is now becoming clear that mobile networking will provide a tremendous impetus to the development of other strategic applications for businesses (Barnes, 2003a).

Research into wireless enterprise communications has typically focused on large corporate users. Much less attention has been given to smaller businesses using wireless solutions. However, small and medium sized enterprises (SMEs) play a central role in the global economy. In New Zealand, more than 96 percent of all businesses are SMEs, amounting to nearly 400,000 companies. While NZ defines SMEs as those companies with less than 20 employees, we take the definition used in Europe and the US, that is, those companies with less than 500 employees. These companies are a significant provider of employment and a major source of commerce's important innovations. This research is aimed at exploring the business implications of wireless data communications for businesses in the SME sector.

Evidence suggests that New Zealand is becoming one of the more innovative adopters of wireless data communications. Already there are many recent examples of companies that have adopted wireless solutions and employed them for business benefit.

This paper reports on a research project examining the nature and impact of wireless business solutions in New Zealand. It is believed that research in this area has the opportunity to help build competitive advantage in the New Zealand SME sector, particularly via the identification and transference of best practices. The research objectives of the project are as follows:

- To analyze current best practices in the application of wireless data communications in the SME sector in New Zealand, and internationally.
- To analyze the business models being applied by SMEs through the use of wireless data platforms.
- To assess the range of technology platforms adopted.
- To evaluate the strategic benefits of wireless data communications for the SME sector, for example in terms of cost savings and competitive advantage.
- To benchmark wireless data solutions in New Zealand with those offered internationally, particularly in Asia, Europe and the US.

This paper reports on the first phase of this research project, which examined the nature and extent of wireless solutions currently in use in New Zealand. The next section briefly describes the methodology for populating the database, and this is followed by a brief summary of some of the results of this. Next, we describe two typical case studies in the most prevalent application areas. Finally the paper rounds off with a summary and some conclusions.

Methodology

The first phase of the research, reported in this paper, involved a thorough search to find as many as possible current wireless and mobile data case study applications in use in NZ SMEs. Data collected was entered into an Access database for easy reference and query. In all 127 case applications were analysed and entered into the database.

The database was compiled by searches made of New Zealand websites, media and print publications and brochures, representative bodies for the mobile IT industry, and reports (e.g., MediaLab South Pacific, 2003). Most of the information gained has been taken from case studies where mobile data providers and New Zealand mobile application IT integrators have displayed customer success stories on their websites.

We were particularly interested to collect information on the following aspects of the wireless solutions examined:

- **Company details**: This included company name, contact names and details, industry, number of staff, and annual turnover.
- **Wireless technology**: Type of wireless devices employed, and other wireless technology used.
- **Business solution**: Application name, type of business solution employed, application provider, and data provider.
- **Strategic impact**: Strategic focus, and business benefits.

Information required for the database such as contact names and details, staff, and annual turnover required more in-depth searches from public sources of information. This included New Zealand business directories available online and from the Wellington Public Library (e.g., NZ Financial Press, 2003).

Classifying the SMEs and the type of industry they work within required some standard terminology. Each SME in the database was categorised with pre-determined business industry descriptions and codes according to the Accident Compensation Corporation (ACC, 2002). These are similar to the Standard Industrial Classifications provided in many countries, but tailored specifically to the New Zealand industry context.

Results

The data suggests that the lion's share of firms' applications of wireless technology in New Zealand is business focused (72%), i.e. it is used to work with other businesses rather than end-consumers. In addition, as shown in Figure 1, the dominant technology used for handsets are handheld computers (31.5%), followed closely by phones (29%), laptops (8.7%) and tablets (2.4%), with the remainder unknown or more esoteric.

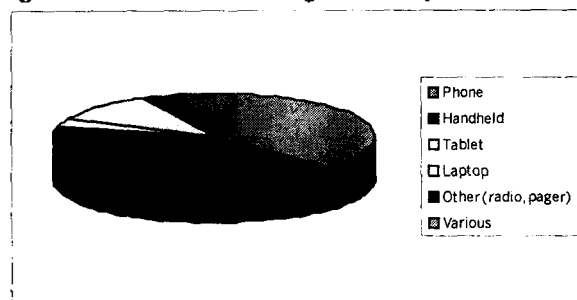**Figure 1: Handset technologies used by NZ businesses**

Figure 2 demonstrates the spread of wireless application usage among different industry groups. The dominant industries for applications are manufacturing (19%), cultural and recreational services (14%), property and business services (13%), transport and storage (11%), and wholesale trade (9%).

Figure 2: Industry sectors employing wireless solutions in NZ
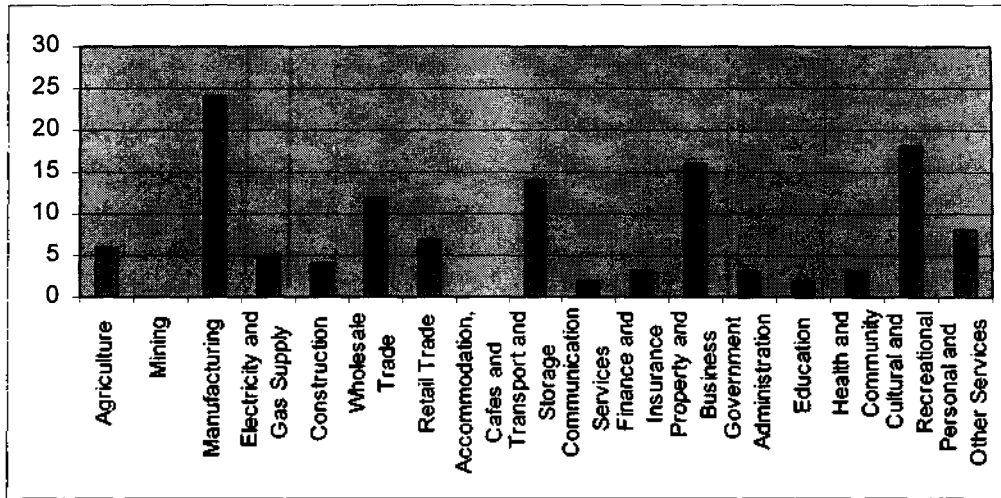
There are around 30 major wireless application developers in NZ. The types of application used are shown in Figure 3. The most popular application is sales force automation (26%), followed by job dispatch/management (17%), asset management/tracking (9%), SMS marketing (9%) and information services (9%).

Figure 3: Types of wireless application in use in NZ
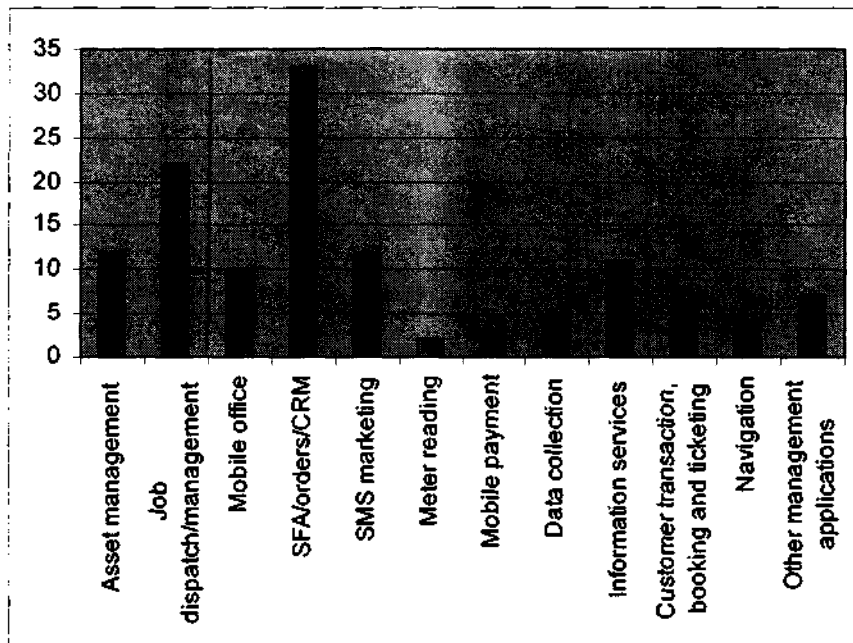
Case studies

As an example of the type of applications in use, let us examine two cases in the most prevalent areas of application usage: SFA and job dispatch/management. The cases are those of Masterpet and GreenAcres. These cases have been supplemented by further interviews, reports, articles, video, and presentations by the customer and vendors beyond those of database development.

Masterpet

Masterpet was already relatively advanced in the area of sales force automation before the introduction of the new mobile sales force solution. The sales force were already using large touch screen TX tablets and dialup modems to send and receive product and ordering data. However, these tablets were bulky, expensive (NZ$10,000 each), and were prone to damage of moving parts (especially hard-drives) as sales representatives carried them from customer to customer. The new system is based on an

iPAQ linked by Bluetooth to a mobile phone data connection, fitted with a wireless data card and field sales software. The aVya software allows sales representatives to perform a variety of common tasks using a handheld computer. This includes placing an order, quotes, generating price lists, updates on the latest special offers, current stock availability, and standard customer information (including, for example, credit limits). Invoices are created automatically, and salespersons can also generate sales reports and demand information without the need for further data entry at the office. Access to email and personal information management (PIM) functions, such as to-do lists, are also provided.

Orders are instantly fulfilled. Orders entered into a handheld by a sales person at a store can be picked and packed and ready to deliver in 10 minutes. The process works as follows (Telecom NZ, 2002b; 2002d):

- Orders are taken via an iPAQ and aVya application.
- The order is sent over the mobile IP network.
- Orders are uploaded to the Navision enterprise resource planning (ERP) system.
- Orders are released to the voice activated picking system (VOCollect).
- Orders are picked and packed. Confirmation is sent to the ERP system.
- The ERP system posts and generates the invoices, which are sent electronically via the Internet.
- Packing slips and invoices are printed.
- Goods are shipped to the customer.

More than half of the sales force is currently using the mobile system, and this is currently being rolled out to all 30 sales representatives in November 2002. Accuracy has increased very considerably using the system, with the error rate falling from around 12 percent to just 2 percent. This equates to a NZ$60 per order cost saving for errors. Typically, this means that sales support staff focus more on adding value to the service rather than correcting inaccurate orders. Improvements in productivity are also apparent, and salespersons typically make at least two extra sales visits per week, or have extra time to build customer relationships.

Green Acres

Enterprise mobility has been applied in the Trade Services Group of Green Acres. This group, launched in 2002, provides electrical and plumbing services. Electricians in the Auckland area are currently piloting the mobile job management system (JMS). Field service staff access the JMS using a handheld computer (an iPAQ with a rugged case and second battery sleeve) with a wireless data card. The system guides staff through a prompted, step-by step system that provides full customer details, important notes (e.g., access points to a site), and a brief description of the work. The job is accepted and completed by a stylus click. The system also provides a stock inventory and management system to provide accurate costing of parts (Telecom NZ, 2002a; 2002c).

The overall emphasis of the system is improved productivity and customer service. The time for an average job despatch has been cut from 10 minutes, and 2-3 phone calls, to a matter of seconds. The system has subsequently reduced mobile phone call charges, largely at peak rates, and simplified the process of communicating with service personnel 'on the job', who are often too busy to answer a telephone call. The system prompts the tradesperson to phone the next customer if their estimated time of arrival is later than expected, and provides a 'tip of the day' to encourage cross- and up-sell opportunities.

Green Acres are currently in the process of rolling out the system nationwide in the Trade Services group. They are also in the process of implementing a facility to print invoices on the job and a swipe-card instant payment option.

The two cases are summarised in Table 1, which provides further information on the companies.

Table 1: Summary of the Cases

Organisation	Turnover	Employees	Application	Strategic Focus	Strategic Benefits
Green Acres. Home services provider, including cleaning, gardening, plumbing and electrical, and pet care.	NZ$30m	~500 sub-franchises	Field force automation. Remote job allocation and management using iPAQ. Customer relationship management.	Superior customer service	• Increased field force productivity • Improved customer service • Shorter response times • Reduced costs, phone charges • Relationship building/sales leads
Masterpet Foods Limited. New Zealand's leading supplier of pet accessories and pet food to pet stores, veterinarians, and supermarkets, with 75 percent of market share.	NZ$40m+	150	Sales force automation. Inventory, pricing, customer history, and order placement using an iPAQ.	Efficiency and accuracy	• Instant customer information/reports • Reduced order processing time • Reduced data entry • Efficiency in inventory management • Improved sales productivity • Work integration of remote staff

Conclusions

The strategic impact of the 127 cases studied in this research provide an interesting perspective on the strategic implications of wireless applications for business. The most popular applications are handheld computers with SFA in the manufacturing industry. Overall, while the benefits of the applications were clear, they typically did not allow a level of benefit associated with business transformation. Similarly, they typically did not enable the development of new products or services for businesses, although a number of consumer products have been created.

Thus, according to Barnes (2003b), the applications are clearly in the mobile employee empowerment phase: in this phase the work patterns of employees are driven by the availability of corporate knowledge on the mobile medium. In this way, mobile employees are able to significantly improve the effectiveness of work configurations and therefore of the products and services provided. Existing wireless applications in NZ have some way to go before "mobile enterprise creation."

In summary, this paper has described the first phase of a project aimed at understanding the nature and potential of wireless applications for SMEs. In addition to some summary data on the sample, two cases provided examples of applications in use. This is an ongoing project. The next phase will involve more detailed interviews and a survey of businesses to examine strategy, business models, technology and organisation in more detail. This is likely to vary widely with the types of application and business sector.

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