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# Micro-Enterprises, Technology and e-Commerce in New Zealand

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## 8. Micro-Enterprises, Technology and e-Commerce in New Zealand

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### Abstract

*Much has been written about the inability of Small and Medium Enterprises to catch the e-Commerce train. This research attempts to delve directly into the motives of Micro-Enterprises decision-makers with a set of interpretive case studies. The rationale for using qualitative research is that since it is about technology and business needs, techniques commonly used in system analysis and requirements gathering can be a natural fit. Although the stories are reminiscent of SME situations in other parts of the world, they reveal that New Zealand Micro-Enterprises willing to set-up e-Commerce ventures struggle with a unique local blend of obstacles. What is revealed is that decision makers operate in a macrocosm, and are influenced by their peers, business partners, suppliers and even competitors.*

Keywords: Micro-Enterprises, NZ, e-Commerce, qualitative, interpretive

### Introduction

As with most of the developed world, Small and Medium Enterprises (Hornby et al. 2002) account for most of the employment in New Zealand. Amazingly, 99.5% of enterprises in NZ are SME of less than 100 employees. As for micro-enterprises, or enterprises having less than 5 employees, they represent 86.5% of the New Zealand total (Statistics New Zealand 2005). It is easy to concede that micro-enterprises collectively form the powerhouse of the economy (Al-Qirim 2003b; Rashid et al. 2001). One could reasonably expect that small independent retailers would be as common and dominant in the virtual world as they are through our malls and city streets (Chau et al. 2000). While SME have much to gain from entering into e-Commerce, it seems that in New Zealand like elsewhere, few are making good use of the opportunities it affords them (Bland 2004b; Jones et al. 2003). A survey by Nielsen/Net Ratings (Bland 2004a) showed that only 7.9% of web surfers actually shop online in New Zealand; this is nevertheless not a negligible market. Customers comfortable with technology conveniently buy online, often for repeat business; many more people use the online media for finding out where the best products and deals are when preparing for a purchase (Schneider 2004). Those are compelling enough reasons for companies to establish an online presence; indeed most major brands have done so. E-Commerce is a great leveller, offering SME the potential to reach more customers and compete on equal footing with larger companies (Schneider 2004). Statistics show that few SME seem to share that view.

Little research has been done on SME and e-Commerce within New Zealand, and what there is mostly used quantitative survey methods. Anecdotal evidence suggests that SME may be “survey-shy” and resilient to conventional quantitative instruments such as questionnaires. SME owners typically have different motivations from mainstream business (Vos et al. 2004); this can make it harder for researchers to clearly understand critical factors behind the decision-making process, for example the actual reasons they choose -or not- to enter into e-Commerce. In these circumstances, case studies built using qualitative methods may be better suited to understanding the key issues facing SME with regards to e-Commerce. Nabeel Al-

Qirim is a prolific New Zealand researcher on the subject of SME and e-Commerce. In his conclusions from a survey on the decision strategy of SME for the outsourcing of IT he recognises that "... implementing qualitative studies could provide more interpretations and relevant justifications" (Al-Qirim 2003b). Other reasons to consider SME as prime candidates for qualitative research are their individuality and amazing diversity, and the fact that they are generally difficult to reach.

The original idea that prompted the research was to develop generic business processes and software to assist SME engaging in e-Commerce. It seemed useful for that purpose to develop an understanding of the target audience and its technology requirements. Those requirements obviously differ greatly for SME depending on what they are trading: whether they are selling a few stable items or a great number of items needing frequent updates; whether selling goods or services, or both; whether selling regionally, nationwide or even overseas; and any combination of these. What technology requirements there were and how they could be reconciled across the variety of SME business practices was explored using qualitative research methods, specifically interpretive case studies. With this approach, the role of the Researcher and his relationship to the businesses studied can be an integral part of the research. Accordingly, businesses selected for study were already known to the Researcher. The exploration of SME diversity was actually considered very important. It was decided to include a varied and representative cross-section of the local SME community, showing how interconnected they are. This meant studying businesses quite different in shape and form hoping to discover the common threads and interactions of their e-Commerce journey. Another influence on this research was previous research findings and anecdotal evidence that SME behave within limits they set themselves - not always consciously- and often act in concert. SME are primarily influenced by their close acquaintances: staff, business partners, vendors, even competitors. This entails that, within a circle of SME working together, some behavioural traits may be displayed by the parts as well as by the whole: a macrocosm.

### **Research Issues**

Large companies can bear the cost of e-Commerce development and maintenance even if there is no immediate financial gain; promoting the company and its products is typically enough justification. Why do SME not as eagerly invest into e-Commerce? For "resource poor" SME, the cost of setting up and maintaining an e-Commerce solution and then waiting for hypothetical returns on investment may be perceived as an excessive risk (Hornby et al. 2002). A classic example would be a website used for retailing a company's products, known as e-Tailing: the minimum capabilities are to present a company's products/services, allow the user to select from those for purchase and finally offer payment solutions. The reality of modern retailing however is constant change in product specifications and pricing, and diverse end-user needs and searches. These problems require the e-Tailing website to be "dynamic". In other words, content should be separate from presentation and the website "data-driven": a scenario where the website's pages are created from a data source. Any change to the data source is automatically reflected in what the end user sees, with no re-programming required. This is commonly implemented with a data source based on a Relational Database Management System (RDBMS) and accessed by some business logic programmed server side with a CGI compliant scripting language (e.g. PERL, PHP, ASP). The remaining components are a web server processing requests coming over the Internet, and a thin client, typically a web browser, that sends those requests and displays the results. This kind of architecture has its origins in the data processing needs of large corporations; it

is known as n-tier architecture (Schneider 2004) for the many (n) parts composing it. It is technologically complex and requires expert help to set up and maintain; of course with complexity come associated costs and management woes. The expertise required to maintain n-tier systems nearly always requires the SME to outsource, in itself a complex decision (Al-Qirim 2003a). The bigger problem for SME however is typically the management of web contents. Data updates should be at the e-Tailer's discretion, but the business often relies on the Internet Service Provider (ISP) or ISP-supplied systems for updating of the data source. Content Management Systems (CMS) available in these cases can be cumbersome and offer no batch updates. This often results in double entry: the business has to maintain duplicate sets of the same data, in effect compounding the problem. The result is that the SME loses effective control of its data. Apart from being inefficient and costly, this situation effectively locks the business into ISP supplied technology, distorting the power of the web hosting company in the business relationship (Porter 1985). Complexity and the associated cost are a thus a problem. However, is complex technology actually necessary for the requirements of SME e-Tailing? How do SME managers find out about these issues?

The reasons behind real or perceived barriers to e-Commerce for SME are varied and complex, and not just about cost and technology. This research was concerned not just with direct technological barriers but more importantly any other factor influencing the SME decision to use technology for e-Commerce. This was summed up in the following questions:

- How much does the understanding of technology and technological issues form part of the decision by SME to start into e-Commerce?
- What other factors besides technology directly influence SME's decision to enter into e-Commerce?

### **Research Method**

All businesses studied here fit the label of micro-enterprises (< 5 staff); this type of business is by far the most common (Statistics New Zealand 2005) yet also the most understudied. Size itself was not the main criterion for selection of the cases however. Selection was done on the basis of diversity, access, and convenience. Another factor was existing relationships - both between the researcher and the businesses and equally between the businesses themselves. Such apparent biases are not a concern in research based on the interpretive paradigm since "... Qualitative researchers stress the socially constructed nature of reality, the intimate relationship between the researcher and what is being studied, and the situational constraint that shape the inquiry ..." (Denzin et al. 2003). It was especially felt that the former relationships - between the researcher and the SME- would assist the gathering of in-depth information, something that surveys cannot do well. Moreover, familiarity of the researcher with the businesses and their history enabled a reality check of the information provided: the way the businesses see themselves and the way they appear may offer some contrasts. Taking the view that hermeneutics in social sciences is not limited to text but also includes actions (Bryman et al. 2003), those contrasts could be important revealers of underlying issues and hidden meanings. The second type of relationships -between SME- offered the opportunity to examine complex business relationships and gain insights into the SMEs' value systems. The relationships between the Researcher and studied businesses are clearly stated in each case.

The research was conducted as a set of interpretive case studies, and then aggregated. Central to each case are semi-structured interviews with the owner/manager and other key staff

identified. Then, providing for multi-method qualitative research (Denzin et al. 2003), triangulation is applied with on-site observation of the companies' practices, systems and software. Interview audio records and transcripts were first subjected to Thematic Analysis using NVIVO software. This was followed by Conversation Analysis (Denzin et al. 2003) to benefit from the recollection of attitude and context offered by the recordings. Added to the mix were field notes from on-site observations, some previous knowledge, some external data (e.g. magazine articles about the SME concerned), plus answers to supplementary questions. The notes were used to cross-check and uncover meaning from the interview material. Although the cases explored were all real businesses, their real names and locations are not divulged as part of the research agreement with each one. This was to reduce "research shyness" in the hope of getting more meaningful participation and better access to company systems. By not fearing ridicule, judgement, or exposure of their inner workings, the SME concerned were more relaxed about participating; thus participation was strongly dependent on trusting the Researcher. Descriptive titles have been assigned in this text to each business and capitalised so as to be identifiable as proper nouns. Research concentrated first on the current use of technology by the business, naturally leading to the temptation to classify each SME along a known taxonomy. Many models (Jones et al. 2003; Schneider 2004; Subba Rao et al. 2003) are being offered, and most would be adequate for this purpose. The chosen model was Rashid, Al-Qirim and Corbitt's (Al-Qirim et al. 2001; Rashid et al. 2001); that particular model is suitable, comprehensive, and designed specifically with the New Zealand business in mind. The model includes four groups of factors influencing the e-Commerce adoption, and this classification was deemed useful from the beginning of the research as a guide on which to build analysis and understanding. It served that purpose well.

Some have argued that in qualitative research, the concepts of reliability and validity have little relevance and that alternative criteria must apply (Bryman et al. 2003). This project followed the proposals of Guba and Lincoln (1994, cited in Bryman and Bell, 2003, pp. 288-289), based on trustworthiness and authenticity. Trustworthiness is supported by several factors:

- The audio recording of the actual interviews, which can provide reliable evidence about what was said; and the triangulation achieved from interviews, observation, prior knowledge and external data
- The signing of a research consent and the validation of collected data and understanding by submitting and discussing research findings with research subjects (which also allowed clarification and expansion of topics)
- The Researcher himself operated an SME locally in the past. Thus the Researcher's experience of business settings and intertwined relationships in the community gives him special understanding of many circumstances faced by such business

Authenticity came from having the discussion with research subjects in an open and frank manner; this was possible because of the confidentiality agreements and the trust and professional standing of the Researcher with the SME involved. During the research process, some subjects also showed a willingness to "bounce" ideas and learn how to improve their practices or make more efficient use of technology. The Researcher thus played a limited consulting role for the businesses concerned; they were able to secure professional advice for free. The research thus was beneficial to the subjects, enabling them to learn about different practices and issues, and hopefully assisting them to better inform future decisions.

## Cases

Each case firstly provides a background description of each business involved, and a narrative of their experiences with e-Commerce technology. This is followed by descriptions of their relationships to each other and to the Researcher, and a summary of the data collection for each one. Each case forms a part of our macrocosm under study: although relationships could not exactly be described as close, the owners/managers concerned have known each other professionally for a while. The names assigned to each case are capitalised and will be used for the rest of this document. All three businesses operate in the same medium size New Zealand city (approx. 150,000 inhabitants); it is possible, even likely, that similar dynamics would exist in larger cities, maybe at the level of the suburb or neighbourhood. It is important to note that the cases were treated confidentially and separately. As far as the Researcher is aware, during the course of the research, the business case managers were not told and did not know of the other case studies taking place. Interviews and observations occurred during the period March to June 2006, with further follow up as late as August 2006.

### *The Internet Service Provider (ISP)*

The owner/manager was a local Internet pioneer when he started this company some years before the World Wide Web was even invented. Back when the Internet was the domain of academics and enthusiasts and had not yet caught the investment attention of large companies and Telcos, The ISP was one of two fledgling supplier of Internet Service to the local enthusiast community. The early days saw The ISP offering the community access to bulletin boards (BBS) and email via UUCP connections (Wikipedia 2006). Over the years the business evolved into an ISP. A separate company was created to set up a high speed broadband wireless network over the city and this now provides the bulk of The ISP's revenue. Thus the core business is providing network access for companies, not only to the Internet but also between different business units in different geographical locations. The two businesses are operated side by side and are considered as one here for the sake of simplicity. The company has approximately 400 clients ranging from the individual to the large corporate and of course many mandatory micro-enterprises. The ISP plays a vital role for many SME with the exhaustive technical support offered to its clientele. The company operates as a de-facto security consultancy owing to its specialisation in installation of firewall and antivirus solutions. Another branch of business is the comprehensive hardware rental system that supports its services. The company's influence on its clients' businesses typically goes beyond mere technological input. The ISP plays the important role of a "change agent" (Jones et al. 2003) or "change motivator". In this role the company proselytises as well as enables other SME achieve e-Commerce capabilities. The ISP has only two full-time staff, but uses an extensive network of consultants and contractors. The manager estimates that this translates into three equivalent full time staff on average. This has shown to be effective in delivering advanced services while reducing the high costs of expert staff.

The company has now admittedly long been overtaken by competitors with deeper pockets and capable of much more investment. Ironically, the company's "niche" is its ability to diversify its services, and to provide highly customised and specialised products to SME. Most effort is ad-hoc and always needs based, requiring an amazing breadth as well as depth of knowledge, something the company handles well with its network of experts. This flexibility permits evolution of the business ad-infinity, or at least as resources allow, and herein is the problem: it is sometimes stretching the firm's capabilities. For example, as new

technology is adopted, some older supported services should ideally be eliminated. However clients often cling to what they have and are reluctant to move on to new things. Dial-up is one technology on the wane, where the company no longer wishes to invest, but which unfortunately will need to be carried for a few years yet. This is made worse by the slow rate of broadband adoption and the state of New Zealand telecommunication's infrastructure.

The Researcher has known and dealt with the company since the early 1990's. The Researcher was for several years a regular contractor for the ISP. These days this relationship has given way to other commitments and the normal frequency of meetings with The ISP staff is around three times a year and half a dozen phone conversations. The data was collected for this case primarily from two one hour-long interviews with the owner/manager. This was followed by approximately a dozen follow-up conversations via phone and email to clarify some points. Two one-day visits were made to two sites the company operates from. The company's computer systems were made entirely accessible to the Researcher; that is the Researcher had full access to the company's servers, a rare privilege and an example of the trust in the relationship. Some company customers also supplied peripheral information. The ISP provides access and support for both The Food Retailer and The Computer Shop cases. The ISP buys equipment from and has a long-standing relationship with The Computer Shop.

### ***The Food Retailer***

The manager of this business immigrated to New Zealand from a west European country about 10 years ago, taking up a position at a large corporation. In his role there he was busy wholesaling commodities by the boatload. Having always enjoyed sharing with friends the famous gastronomic specialties of his homeland, he was struggling to get the right supplies and this made him aware of a market niche. In 2001, he started his own business to fulfil that niche. Originally the business was operated on a part-time basis, but grew enough in its first year to enable its owner to devote his entire time to it. The Food Retailer is a rather typical micro-business, for a long time running with a sole owner/operator. The company now caters to an enthusiastic up-market clientele, carving a niche selling unique European foodstuffs previously not available in New Zealand. The Food Retailer today sells approximately three thousands distinct food products. Most products are sourced from overseas suppliers; a few are obtained locally. The Food Retailer is both a wholesaler and a retailer. The company carries several distinct product ranges to be sold to different channels: these vary from specialised delicatessen shops and supermarkets to restaurants, and also direct to the public. The company wholesales by direct representation around the country; the manager does some of the representation himself, and employs the services of a professional contract representative. A shop located adjacent to the company's main warehouse in the city suburbs is open six days a week. Direct public sales are 95% through the shop, the remainder coming from orders sourced by phone, fax or online. The company's website is offering information on most products to the different channels and has an online ordering capability.

Technology is pervasive throughout The Food Retailer's operations, despite a rather crude infrastructure. The overall investment in IT is rather trivial. Computer hardware at the firm's premises amount to three older PCs and the manager's laptop. The office is linked to the outside world via an ADSL router acting as a hub for the whole network. A barcode scanner is attached to a computer by the shop counter and acts as a Point-Of-Sale (POS). The POS is linked to a sales database on another PC on the local network. The software used for the POS and the sales database is duplicated on the manager's laptop, for redundancy and security. This effectively gives an offsite backup as the manager takes the laptop computer home every

night and allows the manager to take the company information with him whenever he travels. Email is an essential tool for communications with suppliers and clients. Email is also used as a major marketing tool: the manager creates weekly newsletters, including special offers and invitations to food and wine tasting events. The manager is proficient in the use of spreadsheets and uses them daily for supply orders, forecasts and sales and pricing analysis. The manager previously worked in the wholesale food industry for a large corporate company. This experience has given him a good understanding of what can be achieved with technology, at least where budget and resources are high. However, the type of industry he is operating in now is very different; he found quite a gap between selling trainloads of goods to large companies and retailing upmarket food supplies to small operators. This can be a cause of frustration: what can be accomplished in his own business with his own technological resources rarely meets his expectations. For example, the website was deemed essential to The Food Retailer's business when the company started. Although primarily created to disseminate product information to a far-flung customer base, there was some hope in the possibility of selling online and reaching new customers in far away places. Things however took a different turn. The Food Retailer's clients, both retailers and general public did not take to ordering online as hoped. There are the usual reasons for this, for example a general lack of trust of the online medium. Another hurdle is that foodstuff are "...experience and sensory products..." (Krishnamurthy 2003) and are not easily sold online. The medium is obviously not ideal to evaluate the quality or suitability of food products. As a result, online sales account for very little. This does not mean that the website is not an effective marketing tool, on the contrary, but that benefits from having a website are very much intangible. The compounding issue however was the inability of The Food Retailer's staff to cope with keeping up to date information for thousands of products. The growth and constant change in the product range, and characteristic price fluctuations of imported products simply meant too much work for a single operator. The result was that the website soon became obsolete.

As the business matured, it has become obvious that e-Commerce still has great potential. The manager discovered that online ordering works best with repeat business - evidently once trust is established from previous transactions. The goal of informing existing customers at least cost is attainable. As for winning customers in the first place, it is now clear that "viral marketing" - old fashioned word-of-mouth - brings customers to the shop as well as resulting in hits on the website. The Food Retailer has recently been able to employ staff, and this is a major milestone in the growth of that business. One staff member is dedicated for the moment to updating the website database so it becomes useable once more. There are also plans to upgrade the hardware and software for the company's IT systems. These efforts need to be seen as part of a renewed strategy to make better use of e-Commerce. Most are essential before proceeding with further plans to revamp and relaunch the website. A new domain name has been secured to be used for the direct sales channel. The existing URL will remain for trade customers only. This in effect will split the business along the B2C / B2B lines. This will be quite a development in this e-Commerce venture.

The Food Retailer's manager and the Researcher were once employees of the same large corporate firm. Since The Food Retailer opened as a business, the Researcher sometimes acted as a consultant for IT related matters: notably with auditing of security procedures and most recently with setting up digital video security. The Researcher is responsible for the architecture of The Food Retailer's website (Jouvernaux 2005) in a previous project which involved the exploration of XML and related technologies for the creation of a fully dynamic e-Tailing website. The Researcher was thus already familiar with The Food Retailer's



business. The perception of technology and plans for e-Commerce were changed however during the course of the study. Data was gathered during four semi-structured interviews with the manager. Many subsequent conversations occurred with the manager and staff for clarifications. The Researcher also made many visits to the business to observe operations.

The Food Retailer is a client to both The Computer Shop and the Internet Service Provider (ISP). The Food Retailer's local area network was setup with help from the ISP, and is connected to the ISP's network via an ADSL router. The company's website is also hosted by the ISP. The Food Retailer has bought computer equipment and accessories from The Computer Shop and is a regular customer.

### ***The Computer Shop***

This business has been in operation since the early 1990's in the city's central business district. The owner/manager started the business as an offshoot of an Auckland-based company he used to work for. The business still has ties today to the parent company via an arrangement which can be best described as a franchise. The larger firm acts as a direct supplier for many products, and gives The Computer Shop better deals from other suppliers by consolidating orders from the two businesses. The Computer Shop is otherwise a fully independent company. The company has been expanding lately following the demise of two local competitors. The company assembles and sells its own brand of personal computers from overseas-sourced components. Although the specifications of those vary with time and component availability, the emphasis has always been on quality and reliability. The manager believes that is why he is still in business today. He is proud of his firm's reputation and says that "word of mouth" is still his best advertising. The Computer Shop retails other well-known brands of laptops and sells all kinds of computer parts and accessories and network equipment. The company is expanding into small electronic consumer goods such as MP3 players and digital cameras. The company technically is just out of the micro-business mould by having seven employees, although two work only part-time. This may be a factor in its more mature use of technology. Another likely explanation is more technology savvy staff.

The business is, after all, a technology company. Customers often come to the shop for advice and support with a particular technological problem; they expect staff to be up to date with current technology. Manager and staff are living and breathing computer hardware and software daily. Consequently, the business has quite a sophisticated understanding of technology, and the ability to put that knowledge into practice to meet the business's own needs. The company has a comprehensive computer network upon which it has built an Intranet. This architecture proves very useful for managing the computer assembly process, for example simplifying access to the many software drivers used with hardware components. The system acts as a knowledge base storing information about problem solving issues and corresponding fixes. Atypically for an SME, the company hosts its public website on the company's own server. This gives the company added control and better overall systems' integration. The fact that the required technical skills are present among staff was an important factor in that decision. On the flipside, the required 24/7 availability introduced the need for upstream bandwidth and reinforced the company's dependence on the Internet. The company's ADSL link was no longer enough to meet the connectivity needs and a faster wireless connection was acquired. The ADSL link was nevertheless kept as a back up.

The company's efforts towards e-Commerce have largely taken place as a result of opportunity. For example, there was no real strategy accompanying the creation of the

company's website apart from the original idea coming from the parent company. Eventually, the website was developed to see what it could do for the business and because many competitors were moving in that direction. The decision was consistent with the underlying belief that the computer hardware industry is well suited to operate over the Internet (Charlton et al. 2004). A more pragmatic reason was that a part-time staff member was also an IT student and could do the development work at virtually no cost to the company. As it is, the website is merely a sophisticated web catalogue. It was never fully completed as an e-Tailing solution: the ordering and payments systems were never implemented. The manager intends to renew the site and include the missing functionality. He is somewhat reticent due to the management issues that this would raise. He finds that keeping the site up to date is already a major drain on resources. There is however some pressure from the parent branch to comply.

The Researcher was an early client of The Computer Shop. The business was a few months old in 1992 when he purchased a computer system there. That relationship has been maintained ever since. The Researcher had professional dealings with the company while working as an independent contractor: notably in the 1990's while acting as a consultant for The ISP. In that role he worked closely with The Computer Shop for the wholesale of hardware solutions. These days the Researcher has little contact with this business; the frequency of visits is estimated at once or twice a year. The data for this research was collected primarily via one two-hour interview with the manager, and another less structured conversation with a key staff member. Follow-up questions were dealt with by phone and emails. Two days were spent observing operations at the company premises. The shop management information system was made available for study. The public website was also studied. The Computer Shop is a client to the ISP, who supplies both Internet links and the email system. It is a regular supplier to The ISP and less frequently to The Food Retailer.

## **Findings**

The findings discussed below are facts, extrapolations, key points and recurring themes in the narrative of each SME and its e-Commerce experience. There has been an attempt to arrange them under specific headings to assist the reader; a few do not lend themselves to this easily. They jointly tell of the technological issues facing an average micro-enterprise in New Zealand today.

### ***Business process model, budgets, market scope, data and software issues***

Not surprisingly, SME business models are most often not "textbook" cases; most evolved by instinct and opportunities rather than planning. There is nonetheless good evidence of the use of business process model as an indicator of success (Paper et al. 2003). E-Commerce is understood by our SME managers as useful to generate efficiencies, better service clientele, and reach new markets. They know this can be key to maintaining a competitive advantage (Porter 1985), for example by reaching wealthy potential clients in rural New Zealand. Therefore, one would expect some kind of formal plan or at least a statement of intentions from our SME with regards to entering into that area. In reality, none of our SME had any specified process, planning, or even budgets in place for e-Commerce. In the micro-enterprise world, decisions are made on the basis of current happenings and available resources; since spare resources are typically close to non-existent, e-Commerce takes a back-seat to most other things. For example, The Computer Shop wants to add online ordering to its website, but has no definite plans as to when and indeed how this might happen. The Food Retailer had great expectations from a website, but did not understand the management ramifications

and was not prepared to invest the necessary resources. The ISP created a website and then lost sight of the reason for having one before abandoning it.

Much has been made of IT and e-Commerce enabling competitive advantage and allowing SME to compete globally or at least nationally (Rayport et al. 2001; Schneider 2006). In reality, our SME like many others, are largely content to operate locally and provide to a local clientele. Indeed for most of them, the very kind of product or services they provide precludes otherwise, or makes it hardly worth the effort. The perfect -but limited- business model that would enable a small company to operate globally may actually be quite rare and possibly over-represented in literature. Competition is firstly local in nature for our three SME: for example The Food Retailer's primary competitors are local supermarkets and other specialty food shops. Customers have many other choices to spend their luxury dollars in many other places around town. SME such as our cases are embedded in their communities, and their reputation is very important to their success. All the managers concerned agree that the satisfaction of their clientele is by far their most important advertising; The ISP qualifies this by quoting the old saying that "...a contractor is only as good as his last job!" The consensus among our SME managers is that the personalised face-to-face and support they offer their customers is undoubtedly where their main competitive advantage lays: this is impossible to replicate via technology. It is how they survive or even thrive.

The most pressing problem for The Food Retailer and The Computer Shop is the huge range of products on their website. Both struggle keeping such information up to date. Although the legal aspects are being dealt with by disclaimers on each web page, both worry what the inaccuracy of web data can do to their business image. The Computer Shop has actually made a big effort towards solving that problem by significantly investing in a fully integrated software solution. The company has one unique repository for its data, and any update to product characteristics or pricing are automatically available to the shop and the website. The manager nevertheless admits that keeping the company's data accurate "...is a full time job!" This solution works well for The Computer Shop because its website is self-hosted. It comes at the cost of hardware and software and connectivity as seen with the redundant connection to the Internet that the company had to procure. The manager gives the distinct impression that he sometimes regrets having spent the money for such intangible returns. He has resolved nevertheless to go forward implementing an online ordering system, under pressure from his parent branch to streamline the brand's image. In the case of The Food Retailer, the company cannot afford the same level of investment; the website hosting is outsourced and updating the data for so many products is not that simple. While The Food Retailer wishes for its website to duplicate all of its product range, the company struggles to free the necessary resources. During the course of this research a new impetus resulted in efforts to update most of the web site data. Whether this can be sustained over time is doubtful. The lesson for would-be e-Commerce entrepreneurs is clear: creating an online presence is not enough; one needs resources to keep it up to date. Many e-Tailers deal with the problem by presenting a mere subset of the products they sell; those websites are more marketing tools than online shops.

### ***Infrastructure, provider professionalism and banking services***

The Basics of e-Commerce viability are computers, software and networks, and the ability to obtain compensation for goods and services offered online (Schneider 2006). This translates in the SME reality to having to deal with hardware and software vendors, web developers,

Telcos, and the banking sector. The chief complaints derived from these interactions were mostly related to infrastructure woes, web development and online payment by credit cards.

When it comes to issues of infrastructure, New Zealand sadly seems to set itself apart in terms of high cost and low quality of broadband access and speed. This has a negative trickle down effect to SME wanting to engage in full e-Tailing. Apart from geographically limited exceptions, the de-facto ADSL broadband network in New Zealand is owned by Telecom New Zealand. Whenever that network is experiencing difficulties, its innocent retailers share the blame. Since outsourcing relationships often only become profitable over time, trust and satisfaction are deemed essential for outsourcing to be of benefit (Al-Qirim 2003a) and loyalty to become established. As a retailer of ADSL service and a provider of outsourcing, The ISP tells us that from his experience customer loyalty is becoming quite fickle. The chief reason is the provider being blamed for problems outside its control due to clients' general lack of technical understanding. The ISP hopes that local loop unbundling (Cunliffe 2006) may bring improvements in the infrastructure and more choice of wholesale access providers. He is uncertain as to what the future really may bring. The other two SME are also far from happy with the state of broadband in the country. The Computer Shop resolved a while ago that it needed two access points to the Internet to ensure availability of its website. The Food Retailer is painfully aware that the speed of its connection is not as good as in Europe where many of his suppliers are, whereas his costs are relatively higher. Lack of confidence in New Zealand's infrastructure is probably more acute than warranted; nonetheless, as long as there are dramatic power outages in the largest city (SCOOP 2006), or broadband woes at the largest Telco, SME will worry about the possible impact on their business.

Many SME themselves are involved in helping other SME getting their e-Commerce off the ground. Smaller providers are often able to give more specialised and tailored services. Both The ISP and The Computer Shop report that many small business managers are frequently incapable of making the right technological decision: the lack of understanding of underlying technology –such as what is best suited to a specific problem- naturally escapes them. Most SME end up using technology of a particular kind because they are familiar with it, or someone they trust has recommended it. Much is clouded by the marketing haze and the claims and counterclaims of vendors. Thus SME managers often fail to distinguish between a price and a solution, and are vulnerable to business predators. An acute example is the way many websites are created. According to The ISP, many local self-styled web developers evolved from desktop publishing and are not always competent e-Commerce designers. These so-called developers get their business using static proposals where aesthetics influence client decision over functionality, which cannot be gauged at that time. The ISP reports cases of companies offering web design by the page, where a page includes from one to a few products. The real costs sky-rocket quickly if a firm has several dozen products, let alone hundreds. Of course, a well known technical solution to this problem is implementing the dynamic n-tier system previously described in section 2. This architecture is complex and beyond the capability of SME themselves, but outsourcing often makes it the right choice to balance investment costs with long term maintenance. Yet this well tried and proven n-tier architectural model seems beyond the competence of many developers. A cynical explanation could be that some developers would rather implement a more lucrative static design. While there are some excellent competent web developers, they are generally kept busy by the larger companies. It is simply too hard for SME to tell them apart. There is a pressing need for training the providers themselves (Walker et al. 2003). Given time web developers will grow from mere brochure designers into better qualified professionals. Meantime, The ISP

manager recommends its clients employ computing students - the city has one university and an institute of technology - to develop their websites. His website, as well as The Computer Shop's and also The Food Retailer's have in fact all been developed independently by different students: an example of our macrocosm at play.

Trust has an important part to play between SME and providers, as well as between SME and their own customers (Salam et al. 2005). Trust becomes especially crucial once money starts changing hands. One would expect that SME naturally enjoy more trust from their customer base than faceless corporate; thus their clients should have no reservations providing payment details such as credit card numbers, and that well-known barrier to online transaction should be the lesser. Strangely, the reluctance to transact online comes from the SME themselves. All three of our SME cases admitted strong reservations about online credit card payments. It is not actually the excessive bank charges that they have most complaints about; rather the problem of charge-back by the banks, sometimes months after a transaction has occurred. This issue may appear blown out of proportion, but is very real to the SME manager contemplating setting-up an online payment system. The Computer Shop manager reports losing several thousands of dollars this way, and feels that the practice is "...fraud condoned by banks". Our managers worked out alternatives to the dilemma, setting up payment facilities for their best customers, e.g. account payable 20th of month. This is not so risky for SME who know and have a long-term relationship with their clients. Another popular way to get around credit card issues is to follow the example of the auction site Trademe (TradeMe 2006) which pioneered online banking in New Zealand as a viable payment option. Online banking however has one adverse consequence: payments received must be manually reconciled before the goods are sent. Ideally, this could be automated via an interface to the bank, but none of the banks contacted (Jouvernaux 2006) offered such an interface or were considering it.

### ***The SME macrocosm built on the Community***

A surprising result was the consensus of views that our businesses had despite their diversity; although it made some sense with regards to technology for businesses that have grown together with it and have dealt with each other for a long time. It could be over-simplified by assuming that The ISP or indeed the Researcher is a common factor driving this. The Computer Shop manager certainly has an in-depth understanding of technology and can form his own opinions. The Food Retailer has seen advanced technology in action in the corporate world and is not easily dazzled. There is plenty of choice and available competition; the relationships are quite open, with no expectation of exclusivity. Yet the businesses in our macrocosm hardly ever look to the outside when wanting advice, services or goods. The truth might simply be that these people are working together because they share some values and attitudes. They would say they like the way each other thinks and the way they do business. The Researcher certainly learnt first-hand that no SME is an island. SME and their owner/manager are members of a community: they talk, share ideas and problems, even across varied industries during the natural interaction that occurs between them. They value each other's opinions and are certainly influenced more by their peers than by marketing campaigns or academic writing. Throughout the studies our case SME managers quoted one another, often justifying their decisions by the advice received from the other. This is why the three are described as a macrocosm in this paper as they follow the trends and behaviours of others like them around them. This is undoubtedly not unique to the SME studied here. There is no doubt that recommendation and informal talk, together with trial and error - where one SME may learn from another's error- forms an impromptu cooperation which shapes how

SME make decisions everywhere. This is not exactly the “cooperative behaviours” recommended by Jones (Jones et al. 2003); this “macrocosmic behaviour” is not organised and works at a lower level than fully conscious decision making. While this intrinsic trust building and the way it influences decisions is probably a generality of many human relationships, it would not be so noticeable in larger companies with more structure and process to their decision making.

Certainly, none of the cases studied herein could be called over-achievers on the e-Commerce scene. That is also what made them so interesting. It goes to show that macrocosmic behaviour is not always positive: it can be a barrier to SME trying to progress with e-Commerce and seeing technical opportunities partly through the eyes of others. For example, as previously stated, when it comes to technical solutions, our three SME limit themselves to each other’s offerings. Further than that, the models they look-up to for shaping their businesses are also part of an “extended” macrocosm. The Food Retailer manager explains that what he wants mostly is not to be left behind by his competitors. His decisions are largely based on what similar firms are doing, whether applicable to his situation or not. The Computer Shop modelled its operations on its parent company, yet their markets are vastly different. The ISP too looked at other organisations as a way to develop its own structure; but followed none. There is a definite element of expediency in the way the macrocosm members make decisions: just being a part of the group seems to actually define the outcome. Mutual trust and respect of course play an important part in that. The fundamental reason behind the behaviour however stems from the well-documented SME lack of resources that brings with it a lassitude of constant fire-fighting. The macrocosm effect is a simplification of the business relationships by pragmatic managers, keen to minimise the mental cost of multiple business partner relationships. It could possibly be observed in multiple instances involving many other SME in the community, and macrocosms themselves quite likely overlap.

## **Conclusion**

There has been little research in New Zealand on SME and how they cope with the technological revolution of the last decade. How they decide on technological investment in e-Commerce and what factors are influencing SME managers’ decisions is poorly understood. Some papers written on the subject subtly paint SME entrepreneurs as a kind of Luddites, refractory to the immense benefit that technology would bring to their business endeavours. Others, more moderate, simply say that SME lack vision when it comes to technology and e-Commerce. The idea that the average SME manager is blissfully unaware of technology and missing out on its benefits is a little simplistic. Comments by researchers such as “... the importance of using technology has not been really understood by some business operators ...” (Walker et al. 2003) are hard to reconcile with the Researcher’s experience: the SME managers of the three cases studied here have all worked for larger businesses with the best of technology at their disposal. It does not change the fact that they make decisions on simple economics. Bearing the frustrations of the technology they can afford, to stay in business means balancing investment, expenses and income. While e-Commerce itself is deemed useful, it is not essential and takes second place. Another angle is that by not investing in technology for technology’s sake, SME collectively do not wish to replicate -albeit on a smaller scale- the excesses and subsequent failures of the dot-com era.

Technocrats often scratch their heads about those SME that do not partake in the great technological ideal; not engaging in e-Commerce is presented as a shortcoming, and often associated with the direst of predictions. This research finds that the reality of talking to flesh

and bone people reveals a different picture. SME owners/managers are passionate and successful at what they do. They are also very resourceful. They know that survival hinges on the relationships with their clients; this always comes before technology and sometimes in spite of it. SME are not just small versions of large companies. They operate very differently: the “chaotic” behaviour mentioned by Fills et al. (Fillis et al. 2004) does not belie the fact that SME are very responsive to their market. These businesses are managed “seat-of-the pants” style and are highly adaptable at finding their niche or following their clientele. Each business is also a reflection of the individuality of its owner; these people of course want to make money, but above all they enjoy doing what they do (Vos et al. 2004). In fact, the main reason behind starting their businesses was to pursue that freedom. If SME appear to be missing out or are delaying entering e-Business, it may not always be the lack of foresight advanced by Jones et al. (Jones et al. 2003) but rather a prioritisation of resources. The research shows that when dealing with SME or attempting to educate them to the benefits of e-Commerce, it is important to consider the macrocosm of their business partners and communities. For SME, strategic planning and other convoluted concepts with origins in more structured organisations take a backseat to the needs of the now. This does not mean they are totally ignored. While there is admittedly more emotion and sometimes less rationale in their decision making process, the entrepreneurs in this study do make strategic decisions about technology and e-Commerce: looking through the mountain of software and other technologies unsuited to their needs, too complex, unreliable or costly, they often decide to take a ‘wait and see’ approach, hoping for something better. What this means to IT professionals is that if the only technology we can provide requires expert users, then we are not really helping the very people we need to. The challenge therefore to IT professionals is to reinvent and democratise technology to cater for the simultaneously varied and quite specific needs of SME.

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