E-Commerce Adoption and Implementation in SMEs: An Analysis of Factors

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Abstract

Much of the literature proposes an extensive set of benefits for organisations that choose to adopt and implement E-Commerce systems. Factors of Business – to-business (B2B) E-Commerce adoption and implementation have been extensively investigated. Despite enormous attention given to encourage Small Medium Enterprises (SMEs) to adopt and implement E-Commerce, little research has been carried out in identifying the factors of Business-to-Consumer E-Commerce adoption and implementation for SMEs. To conduct the study, Tornatsky and Fleischer model was adopted and tested in three SMEs located in Christchurch, New Zealand. This paper explores the factors that impact the decision and method of adoption and implementation of E-Commerce systems. The factors that promote adoption and implementation of E-Commerce technologies are discussed, together with the barriers. This study will help SME owners to effectively handle the adoption and implementation process and will also improve the chance of successful E-Commerce implementation. The implications of the findings for managers, consultants, and government organisations engaged in promoting E-Commerce adoption and implementation in small businesses and future research are discussed.

Keywords: E-Commerce in SMEs, B2C E-Commerce, E-Commerce adoption and Implementation, E-Commerce Website Implementation, E-Commerce Models.

1   Introduction

Small and medium enterprises (SMEs) are an important sector of the economy and constitute more than 90% of the businesses in some countries (OECD, 1998). In New Zealand, SMEs form a significant component of the economy output (35%) in terms of the number of firms (96%) and number of employees (41%) (MOED, 2000).

With increased globalisation of the world economies and immense development of Internet, market opportunities seem to be endless for most commercial enterprises.

The Internet has had a huge impact on the way businesses are organised and conducted today.This is despite the bursting of the dot-com bubble in the United States in 2001. An increasing number of businesses today are using the Internet as a fundamental communication tool to conduct business. The Web is an extremely efficient medium for accessing, organising, and communicating information. Both large and small companies are embracing the Web in order to communicate and conduct businesses with their current and potential customers.

Due to the Internet, businesses now compete in a physical world made up of bricks and mortars as well as in a virtual world made up of information technology.

The Web has some unique and powerful characteristics that differentiate it from conventional communication model. In this new environment businesses are able to consider consumers individually, customise their services and products, and establish a two-way communication with their consumers. Internet provides different opportunities to the small firms such as gaining access to international markets by diminishing geographical barriers. According to McCollum (1998) doing business on the internet has become a competitive necessity for most of the small businesses. Zwass (1998) defined e-commerce as "the sharing of business information, maintaining business relationships, and conducting business transactions by means of telecommunications networks". In this paper small business e-commerce is defined as, "the use of Internet technology and applications to support business activities of a small firm" (Poon, 2006).

Based on Tornatzky and Fleischer (1990) and Roger's (1995) theory, adoption of technological innovation can be divided in three stages:

1. Initiation
2. Decision to adopt
3. Implementation

In the initiation stage an organisation gathers information and determines the utility of the innovation. In the next step the organisation decides to adopt an innovation and then an implementation phase follows. Implementation is critical stage in a diffusion process as it requires action on the part of the adopters to put the idea into practise. For many small businesses, the adoption of e-commerce technology comes under the guise of implementing a website for informational, transactional, and strategic purposes Raymond (2001). E-commerce adoption is

defined in this study as having at least a functional website capable of providing basic operations such as providing information about the business and its products and services. According to Vaidya and Nandy (2006) the extent of E-Commerce use by firms varies considerably and can be divided into five levels.

Level 1	Website with just broad information about the company.
Level 2	Website with relevant information on products and services.
Level 3	Website with support for selection and purchase decisions.
Level 4	Website with online facility for placing orders.
Level 5	Websites that allow actual financial transactions.

Ministry of Economic Development (2000) mentioned that the effective use of E-Commerce can assist New Zealand business, particularly small and medium-sized enterprises (SMEs), to offer niche products and services to a global market. It will allow New Zealand SMEs to overcome the problems associated with distance from markets and the small size of economy. According to Qirim (2006) SMEs did not take a proactive approach in adopting E-Commerce in New Zealand and as a result fall behind large organisations in adopting and implementing E-Commerce more strategically in their business. Contrary to the perception of New Zealanders as innovators with a 'can do' attitude, the Deloitte E-Business survey (2000) of 279 medium-sized firms concluded that "New Zealand organisations are laggards in adopting and embracing E-Business." Only 19.6% New Zealand firms were involved in B2B sales and 19.2% were engaged in B2C sales.

Many studies exist about the adoption of Business to Business E-Commerce and electronic data exchange (EDI), but most of them are focused on large organisations (example Lacovou, 1995, Chan and Swatman, 1998). Numerous qualitative and quantitative researches have been conducted to find out the potential factors that are critical to IS implementation in small business (Cragg and King, 1993; Delone, 1988; Yap et al. 1992). However, little research has been done to investigate the factors of E-Commerce implementation in SMEs (Chan and Swatman, 1998; Lee and Kim, 2006). This is supported by Chong, Pervan, Bauer (2001) when they mentioned that implementation factors of electronic commerce is widely studied in large organisations but their applicability to small business is questionable and doubtful. Several researchers have showed in their research that SMEs have different technology adoption and implementation patterns than the large organisations (Rogers, 1983; Cragg and King, 1993). Without knowing the factors of E-Commerce implementation SMEs cannot effectively implement E-Commerce and may waste their limited resources. Thus, there is a need to identify the factors that influence E-Commerce implementation in SMEs. It is also important to clearly understand the context within which E-Commerce systems are implemented. The understanding of the factors that affect E-Commerce implementation will help SME owners, researchers, practitioners, policy makers, and developers to implement E-Commerce systems more effectively. Thus the purpose of this preliminary study is to derive a clear understanding with respect to the adoption and implementation of business to Consumer E-Commerce in small and medium sized enterprises (SMEs). The issues and problems encountered by the organisations in the process of E-Commerce implementation and the factors that influence this process are investigated in this research.

In particular, this research aims to:

Explore the factors that affect the implementation of E-Commerce systems in SMEs and to derive a clear understanding of how they impact the implementation process.

The next section presents a literature review of IT adoption frameworks and introduces the model used in this paper.

2   IT Adoption Factors in SMEs: A Review of the Literature

Roger's (1995) model of technological innovation is widely accepted in information systems research. Roger (1995) identified five critical characteristics of the innovation that influences its adoption:

1. Relative advantage
2. Compatibility
3. Complexity
4. Trialability
5. Observability

Kwon and Zmud (1987) suggested five relevant factors that affect IT implementation: characteristics of user community which includes education, job tenure and resistance to change, organisation characteristics (centralisation, formalisation, and specialisation), and characteristics of the technology being adopted (complexity), characteristics of the task to which the technology is applied (task autonomy, variety, and uncertainty), and organisational environment (uncertainty, interdependence). The most important factors related to successful implementation are top management support, compatibility of task characteristics, innovation characteristics (relative advantage, complexity, and compatibility), commitment to change and implementation effort, and extensive project management and planning (Copper & Zmud, 1990; Ives & Olson, 1984; Premkumar, Ramamurty, and Nilakanta, 1994). Top management support is considered as one of the most important factors to facilitate successful implementation (Grover, 1993). A review of the IS implementation literature also shows that the framework developed by Tornatzky and Fleischer (1990) may be useful in developing a model for the implementation of E-Commerce. This model represents three major contexts of the implementation of IS, they are: (1) characteristics of IS technology innovation, (2) organisational factors, (3) IS related factors.

The summary of the factors affecting the IS, EDI, and E-Commerce implementation are given in table 1.

Table 1: Factors affecting the IS implementation

Reference	Subject	Type of Company	Explanatory Variables
Tornatzky and Fleischer (1990)	IS	Large	-IS technology innovation -Organisational factors - IS related factors
Chan and Swatman (1998)	EC	Large	-Organisational Characteristics -Environmental Characteristics -Technological Context
Kim and Lee (2006)	EDI	Large and SMEs	-Organisational - Structural - Technical - Managerial -Environmental context
Thong	IS	SMEs	-CEO Characteristics -Perception of IS -Organisational Characteristics - Competitive Pressure

However, as most of the research has been done in the area of business to business e-commerce hence some factors may not be appropriate or relevant. Thong (1999) pointed out that it would be inappropriate to apply the theory of IS implementation to all types of IS innovations. So, in order to study the factors influencing E-Commerce adoption and implementation we may need to refine and customise the IS theories to match the context.

2.1 A Model of E-Commerce Adoption in SMEs

A number of different theoretical frameworks and models of implementation have been suggested over the past two decades.

After reviewing all the variables studied previously, a significant level of overlapping of contexts is observed. Since this research question has not been studied previously, a theoretical model (Figure 1.1) was developed from the literature review, and used as the research guide. Four factors are included in the model, namely, (1) organisational factors; (2) managerial factors; (3) environmental factors; (4) technical factors.

A preliminary framework of E-Commerce implementation in small and medium size enterprises can therefore be conceptualised as below:

Figure1: Preliminary Framework
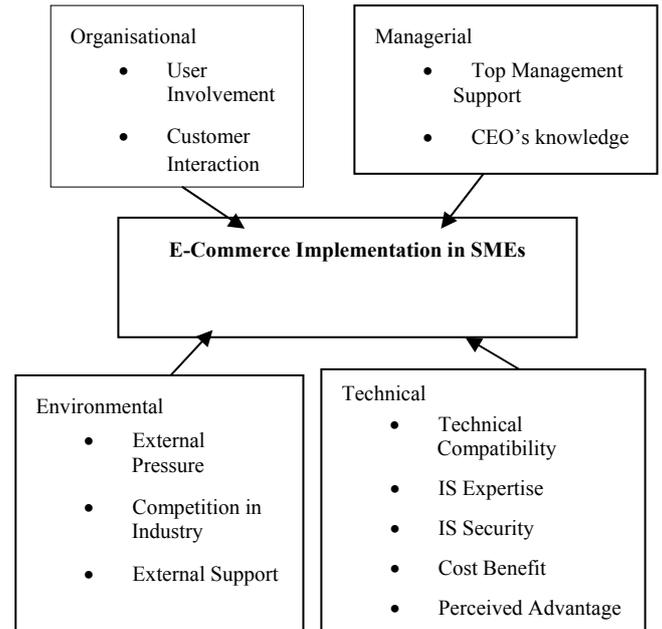
In order to fully understand the preliminary framework it is important to have a clear understanding about the factors mentioned in preliminary framework. Each of the variables shown in the above model is discussed below.

2.2 Organisational Factors

Customer Interaction

According to Grover (1993) the degree of customer interaction represents the importance placed to customer needs and customer research. The Internet provides new opportunities for companies to interact with customers and according to Liu and Arnett (2000) websites should be designed in such a way that customer needs are served with quality information and responsive service. Lee and Kim (2006) said that organisations should monitor relevant markets to determine customer needs and they goes further to state that the extent of customer interaction is positively related to Internet-based Information Systems implementation.

User Involvement

The user involvement in the implementation process of EDI systems positively influence the system implementation process (Grover, 1993). User involvement also reduces resistance to changes and increases user acceptance for the new system. Kim and Lee (2006) observed that user involvement in the EDI implementation positively influence the implementation process.

2.3 Managerial Factors

Top management Support

The support from top management is the precondition for successful implementation of systems (Zmud, 1983). Grover (1993) echoed by stating that the top management support facilitates the adoption and implementation of information systems. In a small business usually the top manager is also the owner of the business. Since the top manager is the key decision maker hence the characteristics of the top manager are crucial in

determining the innovative attitude of the small business. In an earlier research Yap et al. (1992) found that the management involvement is crucial to IT success within SMEs. Other researches also showed that the decision of ICT adoption in SMEs is likely to be made by the owner (Doukidis et al. 1996; Matlay and Addis, 2003). Thong (1999) said that support from CEO would positively influence the likelihood of IS adoption.

CEO's IT Knowledge

Individual characteristics of CEO, such as education, age, experience, and psychological trait have been found to strongly influence innovation adoption (Rogers, 1995). Thong (1999) found that the CEO's willingness to adopt new ideas and technological innovations has a positive effect on IT adoption. Therefore it is important to explore the impact of the CEO's willingness and IT knowledge on e-commerce adoption.

2.3   Technical Factors

Technical Compatibility

Tornatzky and Klein (1990) identified compatibility as one of the influencing innovation characteristics. Compatibility is defined as the degree to which an innovation is perceived as consistent with the existing values, needs, and past experiences of the potential adopter (Thong, 1999). Thong (1999) further added that if IS are compatible with existing work practices then SMEs will be more likely to adopt them. Kim and Lee (2006) suggested that technical compatibility will positively influence EDI implementation.

IS Expertise

New technical ideas can be understood and implemented easily by an organisation that possesses technological knowledge (Dewar and Dutton, 1986). Thong (1999) described that many small businesses fail to utilize IS due to lack of IS knowledge and expertise. Research by Ettlie (1990) suggested that organisations with employees who have high level of technical expertise are more likely to implement a technical innovation. On the other hand organisations with less IS expertise are less likely to be in the forefront of IS implementation. Kim and Lee (2006) suggested that higher degree of IS expertise would enhance the chance of successful implementation. In addition, it would appear reasonable to suppose that greater level of IS expertise will positively influence the implementation of E-Commerce systems.

IS Security

The importance of IS security has increased a lot in the recent years. Many researchers have identified security issues as a major obstacle to implement E-Commerce (Poon and Swatman, 1999; Tan and Tao, 1998). Lee and Kim (2006) suggested that consumers feel insecure to send sensitive information and to buy things online if the confidentiality and integrity of the communications and transactions are not ensured. Hence, higher security concerns may negatively influence the implementation of E-Commerce in organisations.

Cost Benefit

Many researchers, Thong (1999), Tornatzsky (1990) etc have identified cost benefit as an important factor for adoption and implementation of IS system.

Perceived advantage

Perceived advantage plays a key role in adoption and implementation of IS system.

2.4   Environmental Factors

External Pressure

The level of pressure by customers during the implementation stage has important influence on the implementation of EDI systems (Kim and Lee, 2006).

Competition in industry

Porter and Miller (1985) suggested that information system implementation can create advantage by giving businesses new ways to outperform their rivals. The business environment in which the business operates is known as competition (Thong, 1999). The extent of competition in industry is related to the adoption of innovations (Gatignon and Robertson, 1989). Grover (1993) found that the companies in the competitive industry environment are more likely to adopt and implement information systems. Kim and Lee (2006) also suggested that the competition among companies in an industry can influence the implementation of EDI systems. Thong (1999) concluded that a small business in an environment that is more competitive would feel a greater need to turn to IS to gain a competitive advantage.

External Support

External Support from consultants and vendors are important factors in IT adoption (Thong, 1999).

3   Research Design and Methods

This study is exploratory in nature in the sense that there is no prior research in New Zealand to guide the current research. Yin (1994) suggested that there are two main research approaches to choose from when conducting research in social science: qualitative and quantitative. In order to choose the suitable approach the main focus should be on the problem definition and the characteristics of the gathered information.

For this research qualitative approach was most suitable, as the purpose of this study is to gain a clear understanding of the factors that influence the E-Commerce implementation in SMEs. As this research is in the field of IS, the case study method is suitable for the following reasons. Firstly, the research question in this study is based on how and why questions. Secondly, researcher has no control over the behavioural events, and lastly, the focus of this study is on a contemporary event. As this research took a qualitative approach thus a survey was not an appropriate approach because of its quantitative characteristics. Therefore, the proposed strategy for this research is case study.

3.1 Case Study Methods

According to Yin (1994) a case study is an empirical research that investigates a contemporary phenomenon within its real-life context. Case study is used when the boundaries between phenomenon and context are not clearly evident and multiple sources of evidence are required to be used. A case study may involve a single or multiple-case study. Yin (1994) further added that evidence of multiple case studies is more convincing and therefore the study will be regarded as more robust. This research followed an established case study method proposed by Yin (1994). Firstly, the selection of organisations and the data collection protocols were formulated and completed.

Case Study Organisations

A range of Small and Medium size companies were contacted for this research. The companies vary in regards to ownership, size and will belong to different business sectors. Furthermore, the selection of the small and medium size companies was made according to the following criteria:

The firms have implemented an E-Commerce platform or are planning to do so in the near future.

The firms have to be located in geographical proximity that is Christchurch area in New Zealand.

Referrals and personal contacts were used in order to identify and contact the SMEs. Only three companies showed interest and willingness to spare part of their time to be interviewed.

Data Collection Method

Yin (1994) stated that the major strength of case study data collection is the opportunity to use different sources of evidence. This use of multiple sources of evidence is called triangulation which gives researchers an opportunity to obtain multiple measures of the same phenomenon. Triangulation can contribute positively towards the validity factor of the research.

In this research primary data was collected through interviews and questionnaires. Secondary data was collected through various kinds of documents: Website, company profile, annual reports. Main intention was to collect companies' background information.

According to Yin (1994) case study interviews may take the form of open-ended, focused, or structured. For the purpose of this research face-to-face semi structured interviews based on open-ended questionnaires were selected. To support the interview an interview guide was constructed. The same interview guide was used for all the interviews.

Face to face interviews are most suitable for exploratory type of study, because the researcher can adapt the questions as necessary, clarify doubts, and ensure that the responses are properly understood (Sekaran, 2000). This is of particular importance as the potential interview participants may not have a clear understanding about E-Commerce and its application. Also face to face interviews allow the researcher to explore issues raised by the respondents, which is not possible through questionnaires or telephone interviews.

In all cases, the interviews were held with top management (chief executive officer, owner/manager, directors). These discussions lasted about one hour to one and a half hours each and were guided with open-ended questions. A tape recorder was used to capture the empirical data more accurately and also notes were taken during the interviews. Second visits to case study firms were used to clarify matters arising from interviews and to fill gaps when required.

4 Results and Findings

Case Study Population

SMEs in Christchurch were identified as the study population for case study investigations. A large number of SMEs are located in Christchurch. Relative ease of access due to their presence in Christchurch is considered while selecting the prospective case study firms in the Christchurch region. This was indeed an important practical consideration in this study and also helpful for the researcher to make contacts with the interviewers easily and conduct follow-up discussions whenever required.

The basic characteristics of three case study firms are given in the table below. All three firms are currently involved in use of E-Commerce. These firms are using E-Commerce extensively; two of them (Firm A and Firm C) are using it for complete E-Commerce transactions and Firm B is using it for supporting the selection and purchase decisions and even giving online facility for placing orders. The firms ranged in size from two employees to eight employees (including the owner). All the owners/managers were involved in day-to-day operations of the business. The owners/managers were IT literate, skilled and knowledgeable about E-Commerce. Furthermore, they were the advocators for the E-Commerce implementation in the organisation.

We did not develop levels of E-Commerce use before the interviews, but inductively categorised them on the basis of their response.

Firm	Industry	No.of Employees	Length of Use	Level of E-Commerce
A	Retail	3	1 year	Level 5
B	Retail/Car	2	10 years	Level 4
C	Retail/Sports	6-8	6 years	Level 5

Organisational Factors

Customer Interaction

The case study reveals the value of customer interaction in the form of feedbacks provided to the SMEs by the customers and suppliers.

For example:

"Customers give us valuable feedbacks and after getting the feedbacks we have improved our system. Suppliers also give us feedbacks". **(Firm A)**

"We rely heavily on the customer feedback…after all this website is for reaching our customers." (Firm B)

User Involvement

User involvement is considered as an important factor as it not only reduces the resistance of users to changes but also increases the probability of success of the system implemented.

"People gave us valuable feedbacks and we also look for the feedbacks from the users of the website. Before launching the website we tested it thoroughly. We also invited some of our friends to test the system by buying some products online". (Firm A)

"Yes, I had tested the website before launching it". (Firm B)

Image

The most important reasons for having a website are to enhance company image and to attract new businesses. All SME managers are content to have the company's website address on their company stationery or on their business cards. They claimed that having a website not only impress customers and follow the trend but also essential to communicate with customers, suppliers, and even employees.

Managerial Factors

Top Management Support

Attitude of the owners, directors or managers towards E-Commerce systems and their involvement with the matters related to the implementation of E-Commerce systems plays a major role in small firms. Due to the fact that the ownership and decision making power in an SME is held by just one or two people, initiation, adoption and implementation of e-commerce into such an organization is heavily reliant on these people's acceptance of a technology. The potential user of e-commerce must not only be convinced of the relevant usefulness of e-commerce (advantages), but s/he must also have a positive attribute towards it (embrace EC); the user must be comfortable with the technology employed (ease of use).

Case study evidence showed that in the small firm context, top management participation may not be confined to certain specific issues such as planning and formulation of business strategy, but may cover all aspects of the business.

"Top management support was absolutely critical…I took all the decisions, both business and technical". (Firm A)

"I am solely responsible for making decisions…I read different articles on E-Commerce and then decided that it would be a good opportunity for our company and then took the decision. I was involved in all phases of E-Commerce implementation and closely monitored the process. I gave all the instructions to the IT consultants about our website". (Firm B)

"I took a pro active stance and took all the decisions on behalf of my company. But the web development company was introduced to me by my manager".

(Firm C)

CEO's IT Knowledge

As the owner/manager of the firms had prior IT exposure thus the training was not very important to them. The case study evidences do not support the importance of training to maintain the E-Commerce systems.

For example:

"...It is a very straight forward system. Vendors also gave us documentation to maintain the system. I personally got some knowledge of web design and E-Commerce…that made it so much easier to understand the system. Also before buying the system we had widely discussed about the support they (IT consultants) are going to give us". (Firm A)

"I am ok using the IT. I think I am a competent user. The developers only gave a 30 minutes training on the E-Commerce system and I can update and maintain my site of my own". (Firm B)

"It was just so easy. We took hardly any training". (Firm C)

Technical Factors

Security

Participants pointed out that security is one of the major barriers in relation to online transactions. All the respondents said that security is a big concern.

"Security is very important. In fact, one of the selection criteria of the E-Commerce system was security related issues. As we deal with sensitive customer information so we have to ensure security to the highest level. The thing which impressed me most about this E-Commerce system was that it was never been hacked. We all mentioned explicitly in our site that we use a third party secure server and no sensitive customer information is kept on the site but all credit card information is kept in a secure server. Also it is important to show the security logo to the customers in order to gain their trust". (Firm A)

"Security issue is a barrier with regards to moving money around the web. I think it is a big problem. ...Most banks have a limit of $1000 on money movement per day. As we are dealing with a large amount of money, people have to quite often contact their bank to transfer the fund to our bank account". (Firm B)

"Security is of course important but every system has security issues. To ensure safety to our customers we use secured transactional environment and regularly update our system…but things are getting better as younger generation is buying things online and they seems to be not much concerned about the security issues". (Firm C)

Cost Benefit

Manager of Firm B claimed that they have no need for a sophisticated website. Websites do not mean that companies provide better products/services to the customers. They believe they can do this better via facsimile and mobile phone. The most important thing is to provide quality and efficiency.

"We still do not get many people buy directly of the web. They want the car to be seen by somebody or checked by somebody…they do not TRUST us, so we do not have a shopping cart on our website". (Firm B)

Neither cost nor pressure from stakeholders is important reasons for SMEs adopting e-commerce (Scupola, 2003). The research founds that SMEs will invest in a website only if it is really needed:

"We don't care about the cost of technology or whether we are forced to adopt it. If we think our company needs it, we will find ways to have it". (Firm C)

Firm A and Firm B also echoed in the same manner.

Perceived Advantage

The major reasons behind implementing E-Commerce were to improve speed and ease of transactions, increase in sales, to reach new customers/markets, larger audience, and to gain competitive advantage.

The following case study evidences indicated the various motivations to implement E-Commerce as part of the business.

"I wanted to give people an online platform, so that they can buy things easily. You can reach so many customers through web and they can shop 24x7 from anywhere in the world. They can now place orders through our site and we deliver the product to them with the help of courier post". **(Firm A)**

"I just can not see why people are not on the web. You just got to be there, so many people now use the web to find their car. Dealers who are not on the web do not know what they are missing out. ...even we put our website address on the registration number plate of the cars that we sell". (Firm B)

"It is so nice to have our company website on the Internet; we can reach our customers and provide information to them. We started with an informational website and that website received hits from virtually all parts of the world. That prompted me to think if people were visiting our site for information then why not try and sell something to them". (Firm C)

Ease of Communication

Research reveals that having a website is essential to communicate with the customers, suppliers and even employees.

For example:

"We have suppliers from different parts of the country and even from overseas....mainly we communicate with them via e-mail ...but now we send e-newsletter to our suppliers every month". (Firm A)

"Significant numbers of our customers come to Christchurch during summer. Our website tells them about good Kayaking sites in and around Christchurch. Our main point of contact with our customers is via the website. ...Also all our suppliers have websites and we communicate with them via e-mail but if we want to get any information about any products then we see their website". (Firm C)

Increase in Sales

Another motivation was increase in sales. SME managers claimed that having a website increased their sales. For example:

"Sales figures have grown up and every month it is growing."(Firm A)

"After launching the website more and more people started coming to us and lot of people send emails to enquire about the cars. People are not going to the car yard but they are going to the websites, finding the car and going to the place where the car is. 80% of our customers have come here through web. " (Firm B)

"At least 20% increase in our sales and customer range has also increased a lot. Geographic boundaries have increased... we are now venturing into over seas markets." (Firm C)

Environmental Factors

Competition in Industry

When the participants were asked about competitive pressure, they agreed that there are some pressures, and they mentioned that the pressure from industry played a crucial role in implementing E-Commerce.

Competition in the industry is huge. ...most of our competitors are using E-Commerce as part of their business. The trick of this business is to getting people onto look at your car. If you do not put them (cars) in front of them (customers), then you won't be a part of the action. (Firm B)

External IT Consultants

Case studies revealed that small businesses use external IT consultants. Extensive web searching and "word of mouth" or referrals played an important role in the selection of external IT consultant. Due to lack of in-house technical expertise all three firms got the assistance of external IT consultants to handle areas that they were not comfortable to deal with, especially the core development of the E-Commerce system.

"For about 3 months I looked at different E-Commerce system, I downloaded the trial versions and then played with them...also compared the quality of the product with price before making the final decision. Other factors that influenced my decision were prompt customer service, I mean if I have a technical problem or want to add some features to my E-Commerce system then they (External IT Consultants) will come back to me promptly. Lastly, Security of the system was also another important feature that I considered". (Firm A)

"To design our E-Commerce website we contracted it to a professional web development company." (Firm B)

"My manager introduced me to a web development company and they did the website for us". (Firm C)

Few More Important Factors

Planning

It appears that these small firms invest some time and effort on defining project goals and feasibility analysis. Also they have clear understanding about their requirements. The main objective of the planning process was the identification of a suitable web developer who will develop an E-Commerce system for them within the budget and time frame.

"We have planned for it (E-Commerce System implementation) quite intensely. We have identified the areas that need to be customised and then negotiated the cost to fit our budget and also done feasibility analysis. The developers have a very formal written plan, which

describes the whole project life cycle. Also they have a very good project management system placed in their website….so that you can track the progress of your project. We were absolutely satisfied with our planning process". (Firm A)

"Not much planning was involved…. I just decided to do it. Only thing that I have done was the cost analysis. Web designers developed a plan before developing and checked it with me. After the website was developed we made few changes and tested it thoroughly before hosting it(Website)". (Firm B)

"Yes the designers came with the detailed plan. Yes it was a written one and we signed it off". (Firm C)

Monitoring the Implementation Process

Monitoring the implementation process was also very useful as indicated in the case study. SME managers regularly monitor their website performance. They use the web statistics to monitor the performance of their website.

"It is important to monitor the progress from time to time….they (external IT consultants) have a very good online project management system placed, so you can track the progress. But generally they are very good in meeting the deadlines. We absolutely had no problem with them". (Firm A)

Product categories, Product quality and price

Product considerations were an important barrier which concerned almost all participants.

"Buying car directly of the web is not going to happen…specially the expensive cars. Reason is the credibility issue….credibility of the cars you are buying. Customers need to do some pre-purchase inspections. Otherwise it is too risky to purchase a car online without checking it. Trust is the biggest concern". (Firm B)

Firm C also echoed by stating *"people are not comfortable to buy high priced items….I think people in my industry would like to touch the product …specially more expensive items. As the Kayaks are highly priced they want to feel it…touch it before buying."*

Cost of Implementation

All the firms mentioned about the budget constrains. There is huge cost associated with the implementation of the technology and then there is an ongoing cost of updating websites, maintaining the technology and updating the systems.

"Cost of implementing an E-Commerce system is definitely a factor. Huge cost is associated with advanced technical implementation but we are a small company and we have limited budget". (Firm A)

"We can improve our website…add more advanced features but only problem is the cost. We are small organisation and thus have very limited financial resources allocated to the E-Commerce project. IT consultants are very professional but they charge too much. Cost is the biggest barrier". (Firm B)

Although the firms have mentioned the huge cost involved with the implementation but it appears that small firms can afford the costs involved with the implementation and maintenance process if they can found need to implement the E-Commerce system.

"We don't care about the cost of technology or whether we are forced to adopt it. If we think our company needs it, we will find ways to have it". (Firm C)

Cost of Freights

One business mentioned cost of freights as one of the major barriers. Cost of freight is important, while ordering online the cost of freight is added to the price of the product and the total cost is calculated. So if the cost of freight is not calculated accurately or if the cost of freight is too much then the company may incur a loss.

"We are selling kayaks to Austria, Canada and even to Hawaii. Cost of freight is a major problem because we do not know exactly how much an item is going to cost us when we are sending it overseas. So when running an E-Commerce website cost of freight is an extremely important consideration". (Firm C)

On way of solving this problem is to integrate the company's E-Commerce system with the IT system of the courier or logistics company in order to get the cost of freight in real time.

"Our system is capable of credit card transaction…not only that, our (E-Commerce) system is integrated with the courier post and they deliver the goods to the customer. We are adding an order tracking system with courier post….so our customers will now be able to track their products". **(Firm A)**

E-commerce system-related factor

The e-commerce system is the new factor that immerges from this study. The case study reveals that, one of the selection criteria of the E-Commerce system was *ease of use.*

Ease of use

For successful E-Commerce implementation *ease of use* is the single most important need to fulfil for potential customers. Several researchers have found ease of use or effort to be an important factor in the evaluation of an electronic service option (Dabholkar, 1996; Lockett & Littler, 1997). Online customers are not technically savvy and they may quit easily rather than tolerate too many difficulties. Thus, easy access to valuable information is a strong requirement of e-commerce and e-service (Voss, 2003). According to Zeithaml et al. (2000), ease of use involves simplicity in access, in download, and in navigation online. Kaynama and Black (2000) revealed that online customers want a professional, clear, and concise site and they want to be able to find the right products and conduct their transactions quickly. The most frequently cited complaints are long download time, difficulty of use, and obsolete content. Usability is the key as e-commerce entrepreneurs must keep their customer needs at the top of the web design priority list (Korper & Ellis, 1999). This case study also revealed that ease of use is very important for success of E-Commerce system.

"Usability of the website is very important. It must be a fast loading site otherwise you will loose customers". (Firm A)

"If it is not easy to use then customers will never use it". (Firm B)

Reliability, Accuracy of information and Up-to-datedness

Reliability refers to the ability to perform the promised service accurately and consistently including frequently updating the website and accuracy of online purchasing and billing. Santos (2003) referred to reliability as the ability to perform the promised service accurately and consistently, including frequency of updating the website, prompt reply to customer inquiries, and accuracy of online purchasing and billing. In e-commerce, a critical concern of trading partners is the reliability of the system underlying its electronic service and transaction processing systems (Greenstein & Vasarhelyi, 2002). The concept of reliability, however, encompasses critical attributes; security of data, business policies, transaction processing integrity, and privacy of data (Applegate et al., 2002). Voss (2003) indicated that reliability has been one of the major causes of dissatisfaction in e-commerce for order fulfilment and it includes the ability to connect to the web, minimum downtime, and systems not crashing. Therefore, reliability can be one of the most significant measures used to assess customer perceptions of e-commerce service quality (Voss, 2003).

All participants suggested that a website needs accurate content and also suggested that effective up-to-datedness is necessary for a website. For example, owner/manager of Firm C said this following story about the importance of accurate and up-to-date information.

"Once we changed our Internet service provider (ISP) and our website settings defaulted back to the default settings… one of our prices were put up instead of $2799 to $99. It was like that for six hours. 2 people in Auckland discovered the mistake and decided to buy a $2799 kayak for $99 only….when we denied to sell them the product they said that we have falsely advertised and we should supply them the product at the advertised price or else they will take us to the court. You need to be very careful about the accuracy of the information and you should update your website frequently or otherwise you are inviting problem". (Firm C)

Firm A and Firm B also mentioned during the interview that they frequently check there website and agreed that accuracy of information is vital for the success of E-Commerce.

Responsiveness

Responsiveness refers to the ability to deal effectively with complaints and promptness of service (Van Riel et al., 2003). According to Carlson (2000), customers expect Internet retailers to respond to their inquiries promptly. Prompt responses help customers resolve their problems and make decisions in a timely fashion (Korper & Ellis, 1999). Additionally, web-based customers want to find desired information quickly and accurately (Zeithaml et al., 2000). Studies on responsiveness of web-based service reveal that there is a significant positive correlation between the speed in delivery of service and user satisfaction (Hoffman & Navak 1996). For example:

"We get terrific amounts of emails and my managers spend approx. two hours a day answering questions.

Customers want to get response quickly so we try to answer the e-mail on the same day". (Firm C)

Conclusions, Implications and Further Research

This preliminary research investigated the factors that influence and inhibit the implementation of E-Commerce in SMEs. Based on the literature and the results of this research, the following conclusions are drawn.

First, organisations that chose to implement E-Commerce are at first felt a need for implementing E-Commerce system.

Second, with regard to the planning and implementation of E-Commerce, this study identifies that SMEs are not completely ignoring the planning phase; rather they are considering it to be critical for successful E-Commerce implementation.

Third, case study revels that top management support are important to achieve successful E-Commerce implementation. This finding is consistent with various literatures.

Fourth, data from the case studies indicate that businesses use E-Commerce to communicate with customers, employees, and suppliers. Businesses also use E-Commerce to sell products and advertise products and services.

Fifth, factors that may hinder the implementation of E-Commerce are: Lack of funds, cost of products, security issues, and credibility of products.

The results of the case studies have implications for businesses as well as for researchers. Researchers may replicate this study from the context of different countries, especially the SMEs in developing countries. Their results could be compared with findings in this research and hence, draw more commonalities and differences with New Zealand context. Professionals may focus on certain E-Commerce strategies to sell or market their products and also could capitalise on some influencers and avoid certain barriers. Policymakers could use the research results to portray more focused policies which could motivate the SMEs to implement E-Commerce as part of their business.

In discussing the limitations of this research, it focuses on the context of New Zealand; therefore the findings may or may not be generalisable to other countries.

Moreover

1. This research relied on information provided by different people. This leaves room for important details to be left out. Also, much of the information that was collected is retrospective data, recollections of past events, and is therefore subject to the problems inherent to memory.

2. The subjects may intentionally seek to mislead the researcher. Also, the statements made by the subjects may be affected by natural human tendencies, such as believes, selective memory and bias.

Due to limited resource, the research was conducted mostly with SMEs based in Christchurch. The result thus causes concern about the generalisation of findings.

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