



Facilitators and Inhibitors of E-Commerce Adoption in an Irish SME: An Action Research Case Study

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ABSTRACT

Although the adoption of e-commerce is widely studied in the academic world, only a small percentage of these studies focus on the retail sector. An even smaller number of these studies focus on the Small to Medium size Enterprise (SME) sector, which accounts for a significant part of the Irish economy (99.4% in 1999). This study examines an Irish SME's adoption of e-commerce, specifically identifying and understanding the factors that affected the adoption process. The research was achieved by conducting an action research case study. The researcher worked in the retail SME throughout the research process, and had been employed there for the previous 5 years. The research concluded that the adoption of e-commerce within the SME sector tends to be slow and fragmented, the presence of a "web champion" is paramount to the success of the project, Internet adoption is faster with the recognition of a business need, and supported the evidence that an SME is more likely to adopt e-commerce when the SME owner has a positive attitude to IT.

1 INTRODUCTION

Zwass (2003) defined e-commerce as "the sharing of business information, maintaining business information, and conducting business transactions by means of Internet-based technology". Figures released from Forrester Research (Business Week, Nov 24th 2003), reveal that e-commerce is surging. Total online sales in Europe will top \$42 billion this year; this represents a 23% increase over 2002. EBay has already seen its European sales volume soar 85% in the past year.

Forfás (2002), an Irish research agency, found that in Ireland 81% of Irish SMEs have Internet access and 46% of the companies surveyed had a web site. E-commerce is widely argued to have the potential to transform the marketplace, and to provide SMEs with a wider variety of opportunities to engage in business activities (Levy et al, 2001).

While research has shown that SMEs are adopting the Internet and e-commerce (Scupola, 2002; Coltman et al, 2001; Levy et al, 2001), there is little systematic research into how such companies are adopting e-commerce. Egan et al (2003), recognised the need for such research: "More work with SME owners might usefully address a method for overcoming e-commerce adoption barriers, this research would be very useful if done in an action research mode".

In answer to Egan's call, and in recognition of the important role that SMEs play in the Irish economy, the overall objectives of the study are to identify the factors that facilitate or inhibit e-commerce adoption in an Irish SME, and to understand how these factors affect the e-commerce adoption process.

2 LITERATURE REVIEW

SMEs are an important sector of the economy as they contribute to economic growth, social cohesion, and employment as well as regional and local development (Scupola, 2002). A Forfás study in 1999 found that 99.4% of enterprises in Ireland are SMEs, and that they account for

just under half of total enterprise employment in Ireland. Therefore, significant opportunities exist for the Irish SME sector to create efficiencies in communications, shift the trading power balance in its favour and create new markets (Egan et al, 2003).

2.1 E-Commerce and SMEs

Information and communications technologies (ICTs) are fundamentally changing the nature of business. Technological innovations such as e-commerce and ICTs are becoming more and more diffuse among SMEs as barriers are substantially lowered by the advent of lower costs, open standards, and more ubiquitous Internet-based technology (Scupola, 2002). Internet adoption by SMEs is important to the generation of critical mass for e-commerce, but successive research studies have shown that significant business benefits are not being realised (Levy and Powell,

Table 1. Factors Affecting the Decision to adopt E-Commerce

Factor	Reference	Facilitator/ Inhibitor
Perceived Benefits	Poon and Swatman (1999) found that perceived benefits were a key reason why participants adopted and continued to use the Internet.	Facilitator
Business Need	There is little evidence of business strategy driving Internet adoption among SMEs. However, Internet adoption is faster when SMEs recognise a business need (Levy and Powell, 2003).	Facilitator
Owner/Manager Influence	The literature on e-commerce adoption has emphasised the importance of a "corporate champion" often identified as the owner/manager of an SME (Scupola, 2002; Poon and Swatman, 1999). An SME that is likely to adopt e-commerce will most often have an owner who has a positive attitude towards IT (Levy and Powell, 2003; Mehrtens et al, 2001).	Either
Web Champion	The web champion or "corporate champion" may or may not be the SME owner.	Facilitator
Organizational Structure	For most SMEs, their failure to plan the introduction and exploitation of new technology is due to management limitations (Levy et al, 2001).	Either
Organizational readiness	This is the extent to which an organization feels ready to adopt e-commerce (Scupola, 2002). Among the factors that determine this are: skills and knowledge of the technology, internal IT support and support from external parties such as IT vendors (Scupola, 2002; Mehrtens et al, 2001; Chapman et al, 2000).	Either
Organizational Skills	E-commerce imposes new skills requirements on the retail sector (Lewis and Cockrill, 2002). The successful uptake of e-commerce requires IT expertise, coupled with strong business applications skills (Lewis and Cockrill, 2002).	Either
Lack of time and resources	SMEs lack the willingness to dedicate the time and resources necessary to resolve their lack of understanding and skills (Lewis and Cockrill, 2002; Chapman et al, 2000). These resources involved are human, financial and time resources (Levy et al, 2001).	Inhibitor
Lack of Understanding	The lack of understanding of the need to adopt innovations, such as ICT and e-commerce, prevents SMEs using them to overcome existing performance gaps or exploit new opportunities (Chapman et al, 2000).	Inhibitor
Cost Factors	Strategically, information systems are used in order to lower the costs of production, coordination and transactions, or to add value to the product, process or service (Levy et al, 2001). Yet, the tendency in SME's is still to view IS investment as a cost (Levy and Powell, 2000).	Either

2000; Poon and Swatman, 1999). The literature states that there is little evidence that SMEs do more than develop websites and adopt e-mail (Levy and Powell, 2000).

2.2 Factors Affecting the Decision to Adopt E-commerce

There are a variety of factors that facilitate *or* inhibit the adoption of e-commerce, and also several factors that could be classified as *either* a facilitator or an inhibitor, depending on the situation of the SME at that time. These factors need to be addressed *prior* to the decision to adopt e-commerce being made. These factors are outlined below in Table 1.

3 RESEARCH METHODOLOGY

This study is concerned with the factors that inhibit or facilitate Internet adoption within an Irish SME context, and also to understand how these factors affected the e-commerce adoption process. This was achieved by conducting an action research study on River Deep Mountain High (RDMH), Galway. The SME involved, RDMH, is a retail outlet based in Galway. The shop has specialised in outdoor clothing and equipment since 1991. RDMH expanded in 1995, opening a second branch in Limerick. Including both shops, there are a total of 20 employees. At the time of the research, there was no web site and hence, no e-commerce or e-business capabilities. The SME was in the process of adopting e-commerce, making it a highly suitable SME in which to conduct the proposed research. In order to increase awareness of the shop and hopefully expand the business, the company was moving to having an online presence, with a view to online shopping facilities in 3 years time. The research took place from August 2003 until August 2004, and it involved 3 distinct Action Research cycles.

The researcher decided that action research was the preferred method for this research based on the factors listed in Table 2 below.

4 FINDINGS

4.1 Factors Affecting RDMH's E-Commerce Adoption Process

From the research, the following factors were identified as having affected RDMH's adoption process:

Table 2. Factors influencing the chosen research methodology

Factor influencing research methodology	Reason for Influence
There is a unique opportunity available to the researcher to conduct the research in a dynamic SME environment.	The SME involved, RDMH, was initiating the process of e-commerce adoption. The researcher was employed here, and had been for six years, and had full access to the SME.
In this case, the researcher is solely responsible for the e-commerce implementation process.	The RDMH management had very limited participation. Action research is a research method that solves immediate practical problems while expanding scientific knowledge (Avison, et al., 1999).
High suitability to the research topic and to how the research will be carried out.	Egan et al (2003), recognised the need for such research: "More work with SME owners might usefully address a method for overcoming e-commerce adoption barriers, this research would be very useful if done in an action research mode".
As the research area is concerned with rich, subjective, qualitative data, not quantitative data, the research philosophy is interpretivist in nature.	Action research tends to be both participative and qualitative. The virtue of action research is in its <i>responsiveness to the research situation</i> (Greenwood and Levin, 1998). One of the key principles of action research is: let the data decide. At each step of the process, the information collected so far will determine the next step of the process.
The research approach will be inductive.	This research is concerned with generating theories not hypothesis testing.
The research situation demands responsiveness during the research project as the research occurs in a changing environment in real-time.	Action research is appropriate when the research question relates to describing an unfolding series of actions over time in a given group, community or organisation; understanding as a member of a group how and why their action can change or improve the working of some aspects of a system; and understanding the process of change or improvement in order to learn from it (Coghlan & Brannick, 2001).
Participation of researcher in the research environment.	One of the reasons for the emergence of action research and its subsequent use in the IS field is the recognition, largely motivated by the early work of ethnographers, that a research environment can be more deeply understood if the researcher becomes part of that environment (McNiff, 2000).
The researcher serves two masters.	In action research, investigators try to fulfill the needs of their study subjects and, at the same time, generate new knowledge. As such, IS action researchers have to serve two masters: their immediate research clients, and the IS academic community in general.

- *Perceived benefits*: It was reported in section 2.2 that the recognition of perceived benefits by an SME will facilitate the e-commerce adoption process. These findings are consistent with the literature review as both the SME owner and the researcher felt that there were perceived benefits available from adopting e-commerce.
- *Web champion*: The literature on e-commerce adoption has emphasised the importance of a "corporate champion" often identified as the owner/manager of an SME (Scupola, 2002; Poon and Swatman, 1999). The "web champion" in the case of RDMH was the researcher, not the SME owner, who initiated and completed the e-commerce site. These findings are consistent with the literature, as the literature states that this role may or may not be assumed by the owner, and also the process of e-commerce adoption will be facilitated by the presence of one.
- *Organizational skills*: The level of knowledge among IT and non-IT professionals is important in the e-commerce adoption process (Scupola, 2002; Mehrtens et al, 2001). Organizations with more IT experience or greater IT already in use are more likely to adopt IT. The findings from RDMH are consistent with this, as the researcher was employed by the organization and completing a MBS in e-commerce. The SME owner had also computerised all of the stock in both branches of RDMH, and so is knowledgeable about IT and has a positive attitude to IS/IT.
- *Lack of time and resources*: SMEs lack the willingness to dedicate the time and resources necessary to resolve their lack of understanding and skills (Lewis and Cockrill, 2002, Chapman et al, 2000). The researcher experienced a significant lack of time during the project. This was due to the fact that the researcher continued to work on the shop floor, as well as developing the website. This is consistent with the literature as RDMH is a typical SME.
- *Lack of understanding*: The lack of understanding of the need to adopt innovations, such as ICT and e-commerce, prevents SMEs using them to overcome existing performance gaps or exploit new opportunities (Chapman et al, 2000). Again, this is similar to above and consistent with the literature. The researcher also lacked some understanding of the new technologies being used in the adoption process.
- *External pressures*: There is little evidence of business strategy driving Internet adoption among SMEs. However, Internet adoption is faster when SMEs recognise a business need (Levy and Powell, 2003). The SME owner did not feel that it was a business need, therefore there was nothing done to adopt or develop a website for the shop until the researcher approached with the research proposal. This is consistent with the literature findings.

4.2 How the Factors Actually Affected RDMH's Adoption Process?

As is evident, not all of the factors listed in table 1 were deemed relevant in the context of RDMH. Why were only six out of the thirteen possible factors listed as relevant? It was found that some were not applicable due to the nature of the website (front-end, information only). Others were not applicable due to the researcher embracing the role of web champion, and not the SME owner. Finally, others were not relevant due to the present state of the SME involved (financial situation, level of IT already adopted and future strategic expectations of having an online presence).

5 CONCLUSIONS

This research has investigated the process that RDMH went through in order to add a website to the organisation. After analyzing an SME that has moved from offline to online, a number of similarities and differences from the literature have been identified. The following conclusions have been drawn from the findings of this research.

This research supports Levy and Powell's (2000) and Poon and Swatman's (1999), evidence that the adoption of IS/IT tends to be slow, fragmented

Table 3. How the factors identified actually affected the adoption process.

Factor affecting the decision to adopt	Facilitated/ Inhibited	How was it relevant?
Perceived benefits	Facilitated	These helped the SME owner to see some future benefit from the project. It also helped to increase the owner's enthusiasm for the website.
Web champion	Facilitated	All of the incentive for this website had come from the researcher. This had started in August 2003 when the researcher approached the SME owner and proposed the website development.
Organisational skills	Facilitated	The researcher was employed by the organisation, so the skills that the researcher had as a result of the 1 st year of the MBS programme benefited the SME.
Lack of time and resources	Inhibited	The researcher worked in the shop and developed the website, and as a result, experienced a serious time shortage during the day trying to balance both activities.
Lack of understanding	Inhibited	The researcher spent extra time on the development of the site, as it was the first time using the software involved, Dreamweaver MX.
External pressures	Inhibited	The researcher saw that customers were ready for the website, having been asked at different times over the previous three years, if the company had one or not. The SME owner did not agree in this instance, as a lack of a business was stated as the reason why the organisation had not previously gone online.
Role of the SME owner ➤ This factor did affect the adoption process, although there was conflict between the researcher and the SME owner when agreeing on the role that it played.	Facilitated	The research has shown that the owner had a very positive attitude to IS/IT adoption as when the researcher approached the owner with the website proposal, the owner agreed to the suggestion immediately. The owner's positive attitude facilitated the adoption of e-commerce, even though it was stated that the owner did not see the website as a business need.
Cost factors ➤ Again, this factor did affect the adoption process, although there was conflict between the researcher and the SME owner when agreeing on the role that it played	Inhibited	Initially, the owner did not feel that cost was an issue as the researcher was completing it in-house. In reality, cost was the deciding factor of the type of web site that would be adopted and developed. The owner perceived the development of the website as free until the 1 st report was studied. It was then decided to adopt a front-end, information only site with no online sale capabilities, as the researcher could develop it in-house at no extra cost. This is consistent with the literature findings as the tendency in SME's is still to view IS investment as a cost (Levy and Powell, 2000).

and occurs in stages. In addition, this research confirms Levy et al's concept that most SME's will pursue a business strategy in which a company combines online e-commerce with a traditional retail outlet.

This research also supports Levy and Powell's (2003) and Mehrtens et al's (2001) research evidence that an SME that is likely to adopt e-commerce will most often have an owner who has a positive attitude towards IT and e-commerce adoption, who is innovative and who is knowledgeable about IT.

The literature on e-commerce adoption has emphasised the importance of a "corporate champion" often identified as the owner/manager of an SME (Scupola, 2002; Poon and Swatman, 1999). The findings are consistent with the literature regarding importance of the web champion, but not with the identity of the web champion, as the researcher assumed the role, not the owner.

Internet adoption is faster when SMEs recognise a business need (Levy and Powell, 2003). The findings were consistent with the literature, as the SME owner did not recognise that the site was a business need, and as a result of this, did not initiate any Internet adoption.

Most SMEs will find that web technologies will not be one of their core competences, Riemenschneider (1999). This is not consistent with the findings, as the researcher was employed by the SME whilst concurrently pursuing a Masters in e-commerce.

This case illustrates that the e-commerce adoption process will be facilitated by a number of factors. These factors include the recognition

of perceived benefits, the presence of a web champion, organizational skills and the SME owner having a positive attitude to IS/IT adoption.

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