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The Role of Small Business Clusters in Prioritising Barriers to E-commerce Adoption: A Study of Swedish Regional SMEs

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Abstract

Despite government initiatives, studies show that SME still fail to realise the benefits of E-commerce adoption. This paper extends existing research by showing that the barriers to E-commerce adoption can be grouped according to two distinct factors: the difficulty of implementing E-commerce and the unsuitability of E-commerce to the business. The paper also shows that the relative importance of these two factors is affected by membership/non-membership of a small business cluster.

Key words: Cluster, E-commerce, Barriers, SMEs.

Introduction

It has long been recognised, both at an academic as well as a government level that the small to medium enterprise (SME) sector is one of the cornerstones of economic prosperity in many countries including Australia (NOIE, 2002, MacGregor *et al* 2005). Yet, despite this, recent studies have shown that SME contributions have fallen in terms of percentage of GDP, in a number of western countries (see for example Abernethy, 2002). While many reasons for this decrease have been offered in the literature, studies show that many SMEs are turning to global markets. This development has been enabled by the advent of E-commerce technology.

There are nearly as many definitions of E-commerce as there are contributions in the literature, however, basically E-commerce can best be described as “the buying and selling of information, products, and services via computer networks” (Kalakota & Whinston, 1997, p.3). While clearly, E-commerce has the potential to become a source of competitive advantage to the SME sector because it is a cost effective way of accessing customers globally, studies (Dignum 2002, Achrol & Kotler 1999, Lee 2001) have also shown that E-commerce brings with it a radical paradigm shift in the way organisations do business. Despite the shift in approach, many SMEs have recognised the benefits of being ‘wired to the marketplace’ and have started to capitalise on these benefits initially by connecting to the Internet. Indeed, according to the American City Business Journals (IEI, 2003), SMEs using the Internet have grown 46% faster than their counterparts who don’t use the Internet.

Despite the exponential growth of E-commerce (the U.S. Census Bureau reports that E-commerce retail sales reached \$11.9 billion in the U.S. during the first quarter of 2003), it is the larger businesses that have reaped the benefits (Riquelme, 2002). In contrast, the rate of E-commerce adoption in the regional SME sector has remained relatively low (Magnusson, 2001; Poon & Swatman, 1998; Van Akkeren & Cavaye, 1999). The slow pace of E-commerce diffusion in the SME sector has led to a variety of studies, both at an academic level as well as through government initiatives. These studies have concentrated on barriers to adoption, benefits derived through E-commerce adoption and problems encountered by SMEs in their move towards E-commerce adoption.

This paper presents a study of Swedish regional small businesses which investigated the barriers to E-commerce adoption (amongst other things). The aim of the paper is twofold: to examine the correlation between barriers to E-commerce adoption in order to identify underlying factors: and to determine whether these differ between SMEs that are members of a small business cluster and SMEs that are not. The paper begins by examining the nature of SMEs and identifying features that are unique to SMEs. A discussion of barriers to E-commerce adoption based on previous research is then presented and the barriers are mapped to the unique SME features. The paper will then briefly examine the role of small business clusters in the adoption of E-commerce. This is followed by a correlation and factor analysis of the two sets of data and a discussion of the results. Finally, the limitations of the study are presented and conclusions drawn.

Small Business

There are a number of definitions of what constitutes an SME. Some of these definitions are based on quantitative measures such as staffing levels, turnover or assets, while others employ a qualitative approach. Meredith (1994) suggests that any description or definition must include a quantitative component that takes into account staff levels, turnover, assets together with financial and non-financial measurements, but that the description must also include a qualitative component that reflects how the business is organised and how it operates. As this study involves Swedish SMEs the Swedish definition (employing less than 50 people) will be used as the quantitative component.

Qualitatively, any description of a small business must be premised on the notion that they are not simply scaled down large businesses (Wynarczyk *et al* 1993) and although size is a major distinguishing factor, small businesses have a number of unique features that set them apart from larger businesses.

There have been numerous studies carried out in order to isolate the features unique to SMEs. Brigham & Smith (1967) found that SMEs tended to be more prone to risk than their larger counterparts. This view is supported in later studies (Walker, 1975; Delone, 1988). Cochran (1981) found that SMEs tended to be subject to higher failure rates, while Rotch (1987) suggested that SMEs had inadequate records of transactions. Welsh & White (1981), in a comparison of SMEs with their larger counterparts found that SMEs suffered from a lack of trained staff and had a short-range management perspective. They termed these traits 'resource poverty' and suggested that their net effect was to magnify the effect of environmental impact, particularly where information systems were involved.

These early suggestions have been supported by more recent studies that have found most SMEs lack technical expertise (Barry & Milner 2002), most lack adequate capital to undertake technical enhancements (Gaskill *et al* 1993; Raymond 2001), most SMEs suffer from inadequate organisational planning (Tetteh & Burn 2001; Miller & Besser 2000) and many SMEs differ from their larger counterparts in the extent of the product/service range available to customer (Reynolds *et al*, 1994).

A number of recent studies (see Reynolds *et al* (1994), Murphy (1996), Bunker & MacGregor 2000)) have examined the differences in management style between large businesses and SMEs. These studies have shown that, among other characteristics, SMEs tend to have a small management team (often one or two individuals), they are strongly influenced by the owner and the owner's personal idiosyncrasies, they have little control over their environment (this is supported by the studies of Westhead & Storey (1996) and Hill & Stewart (2000) and they have a strong desire to remain independent (this is supported by the findings of Dennis 2000 and Drakopolou-Dodd *et al* 2002).

These are summarised in Table 1. An analysis of the features revealed that they could be classified as being internal or external to the business. Internal features include management, decision-making and planning processes, and the acquisition of resources, while external features are related to the market (products/services and customers) and the external environment (risk taking and uncertainty).

ID	Features Unique to SMEs	Reported by
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<i>Features Related to Management, Decision Making and Planning Processes</i>			Internal Features
INT 1	SMEs have small and centralised management with a short range perspective	Welsh & White (1981) Bunker & MacGregor (2000)	
INT 2	SMEs have poor management skills	Blili & Raymond (1993)	
INT 3	SMEs exhibit a strong desire for independence and avoid business ventures which impinge on their independence	Reynolds et al (1994) Dennis (2000)	
INT 4	SME Owners often withhold information from colleagues	Dennis (2000)	
INT 5	The decision making process in SMEs is intuitive, rather than based on detailed planning and exhaustive study	Reynolds et al (1994) Bunker & MacGregor (2000)	
INT 6	The SME Owner(s) has/have a strong influence in the decision making process	Reynolds et al (1994) Bunker & MacGregor (2000)	
INT 7	Intrusion of family values and concerns in decision making processes	Reynolds et al (1994) Dennis (2000) Bunker & MacGregor (2000)	
INT 8	SMEs have informal and inadequate planning and record keeping processes	Markland (1974) Rotch (1981) Reynolds et al (1994) Miller & Besser (2000) Tetteh & Burn (2001)	
<i>Features Related to Resource Acquisition</i>			
INT 9	SMEs face difficulties obtaining finance and other resources, and as a result have fewer resources	Welsh & White (1981) Cragg & King (1993) Blili & Raymond (1993) Gaskill & Gibbs (1994) Reynolds et al (1994)	
INT 10	SMEs are more reluctant to spend on information technology and therefore have limited use of technology	MacGregor & Bunker (1996) Abell & Limm (1996) Poon & Swatman (1997) Walczuch et al (2000) Dennis (2000)	
INT 11	SMEs have a lack of technical knowledge and specialist staff and provide little IT training for staff	Welsh & White (1981) Blili & Raymond (1993) Cragg & King (1993) Reynolds et al (1994) Bunker & MacGregor (2000) Martin & Matlay (2001)	
<i>Features Related to Products/Services and Markets</i>			External Features
EXT 1	SMEs have a narrow product/service range	Reynolds et al (1994) Bunker & MacGregor (2000)	
EXT 2	SMEs have a limited share of the market (often confined towards a niche market) and therefore heavily rely on few customers	Reynolds et al (1994) Lawrence (1997) Hadjimonolis (1999) Quayle (2002)	
EXT 3	SMEs are product oriented, while large businesses are more customer oriented	Reynolds et al (1994) MacGregor et al (1998) Bunker & MacGregor (2000)	
EXT 4	SMEs are not interested in large shares of the market	Reynolds et al (1994) MacGregor et al (1998)	
EXT 5	SMEs are unable to compete with their larger counterparts	Lawrence (1997)	
<i>Features Related to Risk Taking and Dealing with Uncertainty</i>			
EXT 6	SMEs have lower control over their external environment than larger businesses, and therefore face more uncertainty	Westhead & Storey (1996) Hill & Stewart (2000)	
EXT 7	SMEs face more risks than large businesses because the failure rates of SMEs are higher	Brigham & Smith (1967) Cochran (1981) DeLone (1988)	
EXT 8	SMEs are more reluctant to take risks	Walczuch et al (2000) Dennis (2000)	

Table 1: Features unique to small to medium enterprises (SMEs)**Barriers to E-commerce Adoption in SMEs**

Like the unique features of SMEs, the barriers to E-commerce adoption can be classified as external or internal to the business. Hadjimanolis (1999), in a study of E-commerce adoption by SMEs in Cyprus, found that external barriers could be further categorised into supply barriers (difficulties obtaining finance and technical information), demand barriers (E-commerce not fitting with the products/services or not fitting with the way clients did business) and environmental barriers (security concerns). Internal barriers were further divided into resource barriers (lack of management and technical expertise) and system barriers (E-commerce not fitting with the current business practices). An analysis was undertaken to examine the relationship between these barriers and unique features of SMEs listed in Table 1. Table 2 shows this relationship by indicating which unique features can be mapped to which barriers.

Barriers to E-commerce Adoption	Reported by	Related to Unique Feature ID
High cost of E-commerce implementation; Internet technologies too expensive to implement	Iacovou et al (1995); Fielding (1996); Lawrence (1997); Purao & Campbell (1998); Van Akkeren & Cavaye (1999); Riquelme (2002); Quayle (2002)	INT 9
E-commerce too complex to implement	Fielding (1996) ; Quayle (2002)	INT 11
Low level of existing hardware technology incorporated into the business	Lawrence (1997)	INT 10
SMEs need to see immediate ROI and E-commerce is a long-term investment	Lawrence (1997); McGowan & Madey (1998)	INT 1
Organisational resistance to change because of the fear of new technology amongst employees	Lawrence (1997); Van Akkeren & Cavaye (1999)	INT 2; INT 11
Preference for and satisfaction with traditional manual methods, such as phone, fax and face-to-face	Lawrence (1997); Poon & Swatman (1999); Venkatesan & Fink (2002)	INT 10; EXT 3
Lack of technical skills and IT knowledge amongst employees; Lack of computer literate/specialised staff	Iacovou (1995); Lawrence (1997); Damsgaard & Lyytinen (1998); Van Akkeren & Cavaye (1999); Quayle (2002); Riquelme (2002); Chau & Turner (2002)	INT 11
Lack of time to implement E-commerce	Lawrence (1997); Van Akkeren & Cavaye (1999); Walczuch et al (2000)	INT 5; INT 2; INT 1
E-commerce is not deemed to be suited to the way the SME does business	Iacovou et al (1995); Abell & Limm (1996); Poon & Swatman (1997); Hadjimanolis (1999);	INT 5; INT 8; EXT 3;
E-commerce is not deemed to be suited to the products/services offered by the SME	Hadjimanolis (1999); Walczuch et al (2000); Kendall & Kendall (2001)	EXT 1; EXT 5
E-commerce is perceived as a technology lacking direction	Lawrence (1997)	INT 1; INT 10; EXT 8
Lack of awareness about business opportunities/benefits that E-commerce can provide	Iacovou et al (1995); Quayle (2002)	INT 1; INT 2; INT 5; INT 8; EXT 3; EXT 4
Lack of available information about E-commerce	Lawrence (1997)	EXT 8

Concern about security of E-commerce	Abell and Limm (1996); Puroo & Campbell (1998); Hadjimanolis (1999); Van Akkeren & Cavaye (1999); Poon & Swatman (1999); Quayle (2002); Riquelme (2002)	EXT 6; EXT 7; EXT 8
Lack of critical mass among customers, suppliers and business partners to implement E-commerce	Abell and Limm (1996); Hadjimanolis (1999)	EXT 2
Heavy reliance on external consultants (who are considered by SMEs to be inadequate) to provide necessary expertise	Lawrence (1997); Van Akkeren & Cavaye (1999); Chau & Turner (2002)	INT 11
Lack of E-commerce standards	Robertson & Gatignon (1986); Tuunainen (1998)	INT 11

Table 2: Summary of E-commerce adoption barriers and their relationship to the features unique to SMEs

Small Business Clusters and E-commerce Adoption

On the surface, it could be argued that all SMEs relate to others and thus are part of some form of small business cluster. Dennis (2000) suggests that any SME dealing with another must impinge on the decision making process even if these decisions involve the strengthening or relaxing of the relationships themselves. In this study, however, we take the more usual view that membership of small business cluster is conscious, interdependent and cooperative towards a predetermined set of goals (Nalebuff & Brandenberg 1996, Achrol & Kotler 1999).

Thus member organisations have interconnected linkages that allow more efficient movement towards predetermined objectives than would be the case if they operated as a single separate entity. By developing and organising functional components small business clusters provide a better mechanism to learn and adapt to changes in their environment.

The advent of E-commerce has given rise to a 'new wave' of research examining the role of small business clusters, particularly in SME's. Much of this research has been prompted by the realisation that old hierarchical forms of company organisation produced relationships which are too tightly coupled (Marchewka & Towell 2000), and do not fit an often turbulent marketplace (Overby & Min 2000, Tikkanen 1998).

Schindehutte & Morris (2001) state that organisations, particularly SMEs, survive or fail as a function of their adaptability to the marketplace. Those organisations that can interpret patterns in the environment and adapt their structure and strategy to suit those changing patterns will survive. While adaptability may be a function of prior experience or business sector focus, in the SME sector adaptability often relies on cluster partners.

Properly utilised, small business clusters can provide a number of advantages over stand-alone organisations. These include the sharing of financial risk (Jorde & Teece 1989), technical knowledge (Marchewka & Towell 2000), market penetration (Achrol & Kotler 1999) and internal efficiency (Datta 1988).

While research examining barriers to E-commerce adoption has identified many that prevent SMEs implementing E-commerce, there have been few attempts to correlate these into logical groupings, nor to determine whether these groupings are impacted by membership/non-membership of a small business cluster.

Methodology

Ten barriers to E-commerce adoption and fourteen drivers for E-commerce adoption were gathered from the literature. A series of 6 in-depth interviews was undertaken to determine whether the drivers and barriers were applicable and complete. All drivers and barriers were found to be applicable and no additional drivers or barriers were forthcoming. Based on the findings of the 6 in-depth interviews, a survey instrument was developed for SME managers. The survey was used to collect data about the drivers and barriers to E-commerce adoption in SMEs. Those barriers which were reported as having a greater than 50% response as important were included in the survey (refer to Figure 1). The respondents who had not adopted E-commerce were asked to rate the importance of each barrier to their decision not to adopt E-commerce. A standard 5 point Likert scale was used to rate the importance with 1 meaning very unimportant and 5 meaning very important. Respondents were also asked whether they were part of a small business cluster or not.

As the survey was intended to examine the drivers and barriers to E-commerce adoption in regional SMEs, the location of the respondents needed to be considered. A set of location guidelines was developed. These were:

- The location must be a large regional centre rather than a capital city
- A viable government initiated chamber of commerce for SMEs must exist and be well patronised by the SME community
- The location should have the full range of educational facilities.
- The business community represented a cross-section of business ages, sizes, sectors and market foci.
- The SME community included those that had adopted as well as not adopted E-commerce.

The location chosen was Karlstad Sweden which met all the guidelines and contained personnel that could assist in the distribution and re-gathering of survey materials. A total of 1170 surveys were distributed by post.

23. This question relates to the reasons why your organisation is not using E-commerce. Below is a list of statements indicating possible reasons. Based on your opinion, please rank each statement on a scale of 1 to 5 to indicate how important it was to your decision NOT to use E-commerce, as follows:

- 1 = the reason was very unimportant to your decision not to use E-commerce**
2 = the reason was unimportant to your decision not to use E-commerce
3 = the reason was neither unimportant nor important to your decision not to use E-commerce
4 = the reason was important to your decision not to use E-commerce
5 = the reason was very important to your decision not to use E-commerce

Our organisation does not use E-commerce because:	Rating				
E-commerce is not suited to our products/ services.	1	2	3	4	5
E-commerce is not suited to our way of doing business.	1	2	3	4	5
E-commerce is not suited to the ways our clients (customers and/or suppliers)	1	2	3	4	5

do business.					
E-commerce does not offer any advantages to our organisation.	1	2	3	4	5
We do not have the technical knowledge in the organisation to implement E-commerce.	1	2	3	4	5
E-commerce is too complicated to implement.	1	2	3	4	5
E-commerce is not secure.	1	2	3	4	5
The financial investment required to implement E-commerce is too high for us.	1	2	3	4	5
We do not have time to implement E-commerce.	1	2	3	4	5
It is difficult to choose the most suitable E-commerce standard with so many different options available.	1	2	3	4	5

Figure 1: Question about barriers to E-commerce adoption used in survey

RESULTS

Responses were obtained from 313 SME organisations in Sweden giving a response rate of 26.8%. From these, 275 responses were considered to be valid and usable. The total number non-adopters (i.e. SMEs not using E-commerce) was 123, representing 44.7% of the valid responses. An inspection of the frequencies indicated that the full range of the scale was utilised by respondents (i.e. every barrier had at least on instance of each rating from 1 to 5).

The first aim of the statistical analysis was to establish correlations between the E-commerce adoption barriers. These are shown in Table 3.

Correlation Matrix

	barr - not match prod/serv	barr - not fit our way of working	barr - not fit cust way of working	barr - no advantages	barr - no knowledge	barr - complicated technique	barr - doubt security	barr - investment too high	barr - no time
barr - not fit our way of working	.746								
barr - not fit cust way of working	.462	.530							
barr - no advantages	.482	.547	.280						
barr - no knowledge	-.030	.054	-.097	0.249*					
barr - complicated technique	-.009	.059	.065	.106	.544				
barr - doubt security	0.184*	0.303**	.098	0.249*	0.277*	.516			
barr - investment too high	-.051	-.138	.092	-.104	.445	.481	0.217*		
barr - no time	-.245*	-.261**	-.056	-.195*	.432	.587	.174	.448	
barr - many choices	-.056	-.005	-.033	.062	.514	.579	.334	.494	.532

* *Correlation is significant at the 0.05 level*

** *Correlation is significant at the 0.01 level*

Table 3: Correlation Matrix of E-commerce adoption barriers, Sweden

The correlation matrix shows an interesting pattern of results. The first four barriers seem to all correlate with each other, but show weak or no correlations with the last set of barriers. Similarly, it appears that correlations exist between the last five barriers in the Correlation Matrix. Therefore, two distinct groupings of results can be identified in the Correlation Matrix. In the first grouping, there is a strong positive correlation between the barriers “E-commerce is not suited to our products/ services” and “E-commerce is not suited to our way of doing business” (Pearson’s $r = .747, p < .000$). These two barriers also show moderately strong positive correlations with the barriers “E-commerce is not suited to the ways our clients (customers and/or suppliers) do business” and “E-commerce does not offer any advantages to our organisation”. In the second grouping, the barriers relating to the investment, time, number of options,

complexity and security aspects of E-commerce adoption generally show moderately strong positive correlations with each other. However, the barriers within these two groupings appear to be unrelated to the barriers in the alternate group, with the exception of very weak correlations for the barrier relating to security and time.

These findings suggested the use of Factor Analysis to investigate any separate underlying factors and to reduce the redundancy of certain barriers indicated in the Correlation Matrix. The results of Kaiser-Meyer-Olkin MSA (.735) and Bartlett's Test of Sphericity ($\chi^2 = 343, p = .000$) indicated that the data set satisfied the assumptions for factorability. Principle Components Analysis was chosen as the method of extraction in order to account for maximum variance in the data using a minimum number of factors. A two-factor solution was extracted with Eigenvalues of 3.252 and 2.745, and was supported by an inspection of the Screen Plot. These two factors accounted for 59.973% of the total variance as shown in Table 4.

Rotation Sums of Squared Loadings			
Component	Eigenvalue	% of Variance	Cumulative %
1 (Too Difficult)	3.252	32.520	32.520
2 (Unsuitable)	2.745	27.453	59.973

Table 4: Total Variance Explained

The two resulting components were rotated using the Varimax procedure and a simple structure was achieved as shown in the Rotated Component Matrix in Table 5. Five barriers loaded highly on the first component. These barriers are related to the complexity of implementation techniques, range of E-commerce options, high investments and the lack of technical knowledge and time. This component has been termed the “Too Difficult” factor. The barriers highly loaded on the second component are termed the “Unsuitable” factor and are related to the suitability of E-commerce to the respondent’s business, including the extent E-commerce matched the SME’s products/services, the organisation’s way of doing business, their client’s way of doing business and the lack of advantages offered by E-commerce implementation. These two factors are independent and uncorrelated, as an orthogonal rotation procedure was used. It is interesting to note that the barrier relating to security loaded on both factors, although the loading on the “Too Difficult” factor was slightly higher.

	Component 1 (Too Difficult)	Component 2 (Unsuitable)
E-commerce is not suited to our products/ services.	-.086	.844
E-commerce is not suited to our way of doing business.	-.034	.909
E-commerce is not suited to the ways our clients (customers and/or suppliers) do business.	-.004	.643
E-commerce does not offer any advantages to our organisation.	.076	.731
We do not have the technical knowledge in the organisation to implement E-commerce.	.743	.074
E-commerce is too complicated to implement.	.852	.102
E-commerce is not secure.	.525	.385
The financial investment required to implement E-commerce is too high for us.	.703	-.092
We do not have time to implement E-commerce.	.742	-.294
It is difficult to choose the most suitable E-commerce standard with so many different options available.	.800	-.054

Table 5: Rotated Component Matrix

The data was then subdivided into two groups, members of a small business cluster (N=63) and non-members of a small business cluster (N=60). A similar approach was taken with the two sets of data (see Tables 5 & 6 – correlation matrices).

Table 5
Member of a small business cluster

	Barr – not match prod/serv	Barr – not fit our way of working	Barr – not fit cust’s way of working	Barr – no advantage	Barr – no knowledge	Barr – complicated technique	Barr – doubt security	Barr – investment too high	Barr – no time
Barr – not fit our way of working	.603								
Barr – not fit cust’s way of working	.607	.566							
Barr – no advantage	.455	.547	.248*						
Barr – no knowledge	.207	.307*	.320*	.402**					
Barr – complicated technique	.297*	.384**	.531	.314*	.635				
Barr – doubt security	.388**	.547	.546	.329*	.513	.718			
Barr – investment too high	-.055	-.128	.080	-.121	.466	.477	.279*		
Barr – no time	.298*	.327**	.458	.217	.576	.796	.594	.459	
Barr – many choices	.380**	.414**	.548	.329**	.653	.763	.631	.485	.757

Table 6
Not a member of a small business cluster

	Barr – not match prod/serv	Barr – not fit our way of working	Barr – not fit cust’s way of working	Barr – no advantage	Barr – no knowledge	Barr – complicated technique	Barr – doubt security	Barr – investment too high	Barr – no time
Barr – not fit our way of working	.745								
Barr – not fit cust’s way of working	.716	.801							
Barr – no advantage	.759	.790	.762						
Barr – no knowledge	.309*	.266*	.295*	.405**					
Barr – complicated technique	.476	.427**	.485	.479	.607				
Barr – doubt security	.593	.541	.579	.630	.495	.851			
Barr – investment too high	-.053	-.132	.085	-.114	.455	.488	.277*		
Barr – no time	.329**	.260*	.415**	.386**	.450	.683	.626	.458	
Barr – many choices	.266*	.342**	.443	.292*	.436	.647	.582	.495	.547

Again, both sets of data suggested the use of Factor Analysis to investigate any separate underlying factors and to reduce the redundancy of certain barriers indicated in the Correlation Matrix. The results of Kaiser-Meyer-Olkin MSA (.856 for non-members, .852 for members) and Bartlett’s Test of Sphericity ($\chi^2 = 404$, $p = .000$ for non-members and $\chi^2 = 331$, $p = .000$ for members) indicated that the data set satisfied the assumptions for factorability. For both sets of data, again, a two-factor solution was extracted. Table 7 shows the total variance.

Table 7
Total Variance Explained

	Component	Eigenvalue	% Variance	Cumulative %
Non-members	Too difficult	1.538	17.086	17.086
	Unsuitable	5.218	57.974	75.060
Members	Too difficult	4.895	54.389	54.389
	Unsuitable	1.407	15.629	70.018

Discussion

An examination of Tables 3 & 4 indicates that correlations between barriers to E-commerce adoption exist and enable the grouping of barriers according to two factors. These factors have been termed “Too Difficult” and “Unsuitable”. The “Too Difficult” factor is related to the barriers which make E-commerce complicated to implement, including barriers such as the complexity of E-commerce implementation techniques, the difficulty in deciding which standard to implement because of the large range of E-commerce options, the difficulty obtaining funds to implement E-commerce, the lack of technical knowledge and difficulty in finding time to implement E-commerce. The “Unsuitable” factor, on the other hand, is related to the perceived unsuitability of E-commerce to SMEs. These barriers include the unsuitability of E-commerce to the SME’s products/services, way of doing business, and client’s way of doing business, as well as the lack of perceived advantages of E-commerce implementation.

An examination of Table 7 shows that while the two factors “Too Difficult” and “Unsuitable” still underpin the barriers to E-commerce adoption, the priority placed on the two factors is substantially different. 54.389% of members of a small business cluster indicated that their main reason for not adopting E-commerce is that the technology is too difficult. By comparison, only 17.086% of the non-members felt that this was their primary reason for non-adoption. Likewise, while 15.629% of the member respondents felt that E-commerce was unsuitable for their particular business, 57.974% of the non-member respondents gave this as their primary concern.

A number of authors (Marchewka & Towell 2000, Achrol & Kotler 1999, Dean et al 1997) suggest that small business clusters assist members by sharing technical knowledge, talent and skills. An examination of the data in Table 7 would tend to refute this, at least for the respondents of this study. However, the data does tend to support the notion put forward by Schindehutte & Morris (2001), Datta (1988) and Overby & Min (2000) that membership of a small business cluster assists in internal efficiency of its members.

Limitations of the study

It should be noted that this study has several limitations. The data for the study was collected from regional SMEs in Sweden. Therefore, although conclusions can be drawn, the results may not be generalisable to SMEs in other countries. Also, the data for the study was collected from various industry sectors and it is not possible to make sector specific conclusions. Finally, this is a quantitative study, and further qualitative research is required to gain a better understanding of the key issues.

Conclusion

The aim of this study was twofold: to examine the correlation between barriers to E-commerce adoption in order to identify underlying factors: and to determine whether these differ between SMEs that are members of a small business cluster and SMEs that are not. To this end, the unique features of SMEs were presented and mapped to E-commerce adoption barriers indicating a potential relationship between the two. Further investigation is required to identify the exact nature of this relationship. Correlation and factor analyses were then performed on the data set of barriers from a study of Swedish SMEs to determine whether any correlations between the barriers existed. The Correlation Matrix indicated two distinct sets of groupings and a two-factor solution was extracted using factor analysis. It was found that ten E-commerce barriers could be grouped according to two factors. These were termed “Too Difficult” and “Unsuitable”. The data also showed that while the two factors “Too Difficult” and “Unsuitable” were appropriate to both members and non-members, there was a distinct shift in emphasis between the two groups.

The study presented in this paper is only one part of a larger long-term project investigating the drivers and barriers to E-commerce adoption in SMEs. Further research is currently being undertaken in order to overcome some of the limitations outlined above. Specifically, the survey instrument is being replicated in two regional areas in Australia, which will provide comparable results.

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