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Barriers to adapt eCommerce by rural Microenterprises in Sweden: A case study

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Abstract

Research has shown that small and medium-sized enterprises (SMEs) are rapidly adopting the e-commerce. However, there is nearly no research into how microenterprises are adopting eCommerce. Present paper focus on microenterprise adaption of eCommerce in terms of barriers in relation to already known research on SMEs. A case study, carried out by 12 microenterprises to find out barriers to adapt eCommerce had been done. The empirical results show that the microenterprises share most of the barriers to adapt the eCommerce with studies of SMEs, but also reveal additional factors affecting adaptation option of eCommerce; supplier agreement, communication and customer strategy. Conclusions are that microenterprises need additional support and communication and customer strategy to adapt eCommerce, depending of their requirement and needs of eCommerce.

Keywords: Microenterprises, barriers, eCommerce.

Introduction

Little research has been done on microenterprises and eCommerce and there are mostly used quantitative survey methods. ICT usage is important for SMEs (Downie, 2011; Sandberg, Wahlberg, and Pan, 2009; Wahlberg, Sandberg, Strandberg, Anderson, Sirkemaa, and Borglund, 2009; Sandberg, Wahlberg, and Håkansson, 2011). ICT usage are able to create business opportunities and reduce the global competition they face (Cloete, 2002; Morgan, 2005), and make them growth (Matthews, 2007; Qiang, 2006; Raymond, 2005; Sullivan, 1985). SMEs want to achieve cost reduction and efficiency improvement with ICT. Cost reductions which can be achieved with ICT and eCommerce are reduced inventory costs, reduced sales and purchase costs and lower sales costs (Ashrafi, 2008; Chaffey, 2009; Chappel, 1999; Harindranath, 2008 [a]; Laudon, 2011; Morgan, 2005; Porter, 1985; Stockdale, 2004). Efficiency improvements that can be made are simplifications in the development and management of information, communication such as e-mail, time savings in procurement processes, production and sales when performing multiple parts in those with ICT support (Ashrafi, 2008; Bharadwaj, 2007; Chaffey, 2009; Chappel, 1999; Harindranath, 2008 [a]; Laudon, 2011, Morgan, 2005; Porter, 1985; Stockdale, 2004). With ICT and eCommerce SMEs can also achieve competitive advantages as new markets, better customer relationships, less mistakes, improved availability and quality of the offered service, faster product development and reduced loss of market share to competitors who have eCommerce (Ashrafi, 2008; Chaffey, 2009; Chappel, 1999; Harindranath, 2008a, 2008b; Laudon, 2011; Morgan, 2005; Porter, 1985; Stockdale, 2004).

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In present paper we use the EU (2013) definition enterprises in terms of number of employees and annual turnovers in following way:

- Microenterprises. This category includes enterprises with fewer than 10 employees,
- Small enterprises. This category includes enterprises that have between 10 and 49 employees and an annual turnover of less than EUR 7 million or an annual balance sheet total not exceeding EUR 5 million,
- Medium-sized enterprises. This category includes enterprises that have fewer than 250 employees and an annual turnover of less than EUR 40 million or a balance sheet total of less than 27 million,
- Large enterprises exceed mentioned limitations.

The most commonly-used theories on adoption decisions by SME owner-managers are; The resource-based view of the business, generic strategies, industry forces and/or value chain analysis; theory of planned behaviour (TPB); technology acceptance model (TAM), and diffusion of innovations theory (Parker and Castleman, 2009). Parker and Castleman (2009) find out that no theory sufficiently explains SMEs adoption of e-business because excludes important aspects of SMEs characteristic.

Purpose

The purpose of present paper is to find out the barriers to adapt eCommerce by rural microenterprises in Sweden.

Method

The study plan for the present study include: review of the literature on barriers to adapt ICT and eCommerce in SMEs. Categorise the main barriers and investigate which barrier microenterprises confirm and add in a case study.

The literature search in scientific databases was based on search criteria's; barriers to adapt ICT and eCommerce in SMEs.

Case study has "consistently been one of the most powerful research methods in information systems, process and supply chain management research, which is used to develop new theory and to gain understanding and insight into complex situations" (Howard, 2007).

Criteria for the selection of microenterprises based on the following assumption: that they have an own website and has achieved the second level of e-adoption ladder charting an SME's progress in using e-business applications. (Lynn, 2001; Lynn, 2005). The steps on the e-adoption ladder are:

Level 1: eMail, internet access

Level 2: Website, on-line communications

Level 3: eCommerce, e-ordering

Level 4: eBusiness, electronic payment

Level 5: A transformed organisation, e-enabled

In order to collect data from each case in present study we utilized databases with business information, corporate websites and interviews. Interviews are open and made with both managers and employee.

Result of literature review

Categorization of barriers to adaptation of ICT and eCommerce is based on our literature review and earlier classification of barriers in SMEs by Chitura, Mupemhi, Dube, and Bolongikit (2008).

Business model and relevance

Factors which make the business model unseemly or irrelevant:

- Unsuitable product/service for eCommerce (Harindranath, 2008 [b]; Love, 2001; Simpson, 2004).
- Lack of linkage between business and ICT strategies (Arendt, 2008; Bharadwaj, 2007; Parker, 1995)
- No interest in a global market (Fillis, 2003; Stockdale, 2004; Taylor, 2004).
- Social and cultural barrier etc. doing business face to face (Kapurubandara, 2006).
- Politics (Bharadwaj, 2007; Kapurubandara, 2006).
- Customer does not use eCommerce and the market would not be of a sufficient size (Cloete, 2002; Dewan, 2008; Laudon, 2011; Ratnasingam, 2004).
- Not suitable software for integrate ICT and eCommerce in the business model (Arendt, 2008; Kotelnikov, 2007).

Awareness and knowledge

SMEs need to be aware of and understand the importance of ICT's potential to streamline the enterprises processes (Boekhoudt, 2004; Buga Melli, 2004; Chappell, 1999; Coete, 2002; Dewan, 2008; Elsam Mani, 2001; Harindranath, 2008 [a]; Johnson, 2010; Jones, 2003; Kapurubandara, 2006). The most serious shortcoming of management's understanding for eCommerce is the strategically use (Chapman, 2000; Love, 2001; Matthevs, 2007; Parker, 1995; Taylor, 2004). One problem is that the ICT-strategy are not documented (Arendt, 2008).

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Employees must have knowledge of and willingness to use eCommerce to create efficiencies (Arendt, 2008; Ashrafi, 2008; Bharadwaj, 2007; Chapman, 2000; Matthevs, 2007; Kotelnikov, 2007).

Resources

In order to be able to have eCommerce some resources are needed. This are:

- People with the right skills (Arendt, 2008; Bharadwaj, 2007; Buga Melli, 2004; Chappman, 2000; Elsam Mani, 2001; Jacobs, 2000; Jones, 2003; Kotelnikov, 2007; Laudon, 2011, Locke, 2004; Parker, 1995).
- Access to infrastructure, software, hardware and other technical equipment (Arendt, 2008; Bharadwaj, 2007; Chappell, 1999; Dewan, 2008; Harindranath, 2008 [a]; Kapurubandara, 2006; Kotelnikov, 2007; Matthews, 2007; Morgan, 2005; Taylor, 2004; Parker, 1995).
- Money for investments and costs associated with these (Ashrafi, 2008; Bharadwaj, 2007; Boekhoudt, 2004; Chappell, 1999; Chapman, 2000; Elsam Mani, 2001; Gray, 2006; Jacobs, 2000; Johnson, 2010; Jones, 2003; Love, 2001; Matthews, 2007; Morgan, 2005; Taylor, 2004; Parker, 1995; Stockdale, 2004).

The economy is the most important resource since SMEs largely finances the investment with the reinvestment of earnings (Harindranath, 2008 [a]).

Reasons for expenditure in software is possible poorly suited to SMEs, lack of standards and lack of compatibility (Arendt, 2008; Johnson, 2010; Parker, 1995; Taylor, 2004).

Within SMEs is an afraid of operating and maintenance costs associated with the ICT tools that can be difficult to budget (Dewan, 2008). Some of the costs may vary depending on the level of education and cultural conditions in a country (Buga Melli, 2004).

Time

SMEs have short of time to work on ICT projects and to network collaboration (Ashrafi, 2008; Gray, 2006). In particular the management focus on issues for survival and strategies (Fillis, 2003; Chappman, 2000; Jones, 2003).

Reliance

The enterprises need to feel secure and reliable to eCommerce from the business and legal perspective (Ashrafi, 2008; Bharadwaj, 2007; Boekhoudt, 2004; Chappell, 1999; Gray, 2006; Harindranath, 2008 [a], [b]; Jacobs, 2000; Kapurubandara, 2006; Kotelnikov, 2007; Love 2001; Parker, 1995; Simpson, 2004).

Things that effects on reliance are:

- Laws and regulations (Jones, 2003)

- Political barriers as protectionism (Chappel, 1999)
- Frightens for failures on security and reliability in financial transactions (Arendt, 2008; Jones, 2003; Taylor, 2004).
- Frightens for viruses and hackers (Dewan, 2008).
- Organizational culture, structures and value chain changes (Arendt, 2008; Johnson, 2010; Love, 2001; Stockdale, 2004)
- Confidence for the consultants and specialists in the area of ICT (Morgan, 2005).

Return on investment (ROI)

A barrier for SMEs to invest in eCommerce is that it is difficult to find good models for calculate ROI (Arendt, 2008; Ashrafi, 2008; Kapurubandara, 2006; Stockdale, 2004; Taylor, 2004).

Adoption

There are processes create psychological barriers (Kotelnikov, 2007). The structure and culture of the organisation affect management's views on the introduction of new tools, working methods, and the staff's willingness (Jones, 2003; Kapurubandara, 2006). There are management that feel that staff attitude is not relevant for the introduction of new tools and working methods (Harindranath, 2008 [b]). In order to avoid the psychological barriers to introduction of eCommerce (software/ hardware, and processes) must be adapted to the actual introduction which category the technology to be introduced belongs (Fichman, 1992). Organisational structure can be a barrier when work with the ICT measures to engage in eCommerce (Ashrafi, 2008).

Result of case study

Brief characteristics of all companies (Cases C1, C12) and the analysis of barriers are summarised:

C1 is an enterprise in the consumer electronics industry, and finished with eCommerce because this does not provide sufficient margin on the products they sell. When they made the investment in eCommerce the management gave a great support. The management was also personally involved, which meant that it did not see any operational or legal problems with eCommerce. The manager says: "We are prepared to re-invest in eCommerce, but then we probably would not have a physical store simultaneously." The reason for this is the time to focus on the different sales channels and to generate different types of costs they have to cover, which will be difficult in an industry where price is an important competitive factor.

C2 is an enterprise with eCommerce B2B in the music industry and sell through e-commerce. They have a problem with their site when the end users of their products can find it and contact the enterprise for buying.

C3 is an enterprise that supplies online marketing and affiliate marketing related products and services as well as software and scripts. It has both individuals and organisations as customer and use eCommerce. The manager made the comment: "Many consultants providing online shop solutions make them so technical that they scare away microenterprises." He thought that the information about the solution is sometimes designed so it gives information overload and sometimes gives bad information about the charges for the solution.

C4 is an enterprise in the food sector that has eCommerce B2B. The manager get the following comment on the eCommerce: "We do not want this to end customers. We are experiencing uncertainty with the technology to end customers. A disadvantage that we have seen is that you lose personal contact and cannot give advice to retailers in the way we want."

C5 is an enterprise in the tourism sector and eCommerce through the portal we get this comment: "One barrier for online booking on its own is in the cost and time when we cannot see what efficiencies we get."

C6 is an enterprise that makes pressure on napkins and sells handicrafts and lacks e-commerce, the manager do following comment: "The barrier of having eCommerce lies in how the customer can participate in the design of it to be printed. You want to have communication with the customer in a variety of issues and we have chosen to have this via e-mail."

C7 is an enterprise that sells food for cats and dogs as well as a provider of services for them. The enterprise lack e-commerce. They have contracts with suppliers that do not use eCommerce.

C8 is an enterprise which is engaged in horticulture and construction. The manager comment: "Since we have four large customers that account for 80% of our revenues, we have no need for any advanced computer. We do not want to invest in advanced ICT if we do not see that you can recoup the investment."

C9 is an enterprise in the food industry and has eCommerce through a portal. The reason for use portal is that you get the opportunity for a higher profit without intermediaries. The enterprise estimates that profit margins could increase by 10-20% without them. Another reason for the choice of a portal is the technical skills they have within the enterprise and that it is believed that a portal can provide other benefits through the possible networking that can occur within the portal.

C10 is an enterprise which carries out book and stationery store and has eCommerce through a portal. It has mainly individuals as clients

C11 is an enterprise which has health and fitness activities, strategic health development, behaviour and

lifestyle coaching, massages. The enterprise lack e-commerce. It has booth enterprises and individuals as clients.

C12 is an enterprise that sells training in the recesses force and economy. The manager comment: "Since we do not have something physical we want to sell it's important to have contact with the customers and we have e-mail. Web, we use only for marketing eCommerce becomes redundant when we have e-mail communication.

Common barriers to adapt eCommerce in microenterprises and SMEs.

In Table 1 we sum up which group of barriers to adopt eCommerce in SMEs from the literature review have been confirmed by our case study in microenterprises.

Table 1. Barriers to adapt eCommerce in microenterprises and SMEs.

Barriers	eCommerce	eCommerce via the portal	Not eCommerce	Have used eCommerce
Business model and relevance			C6,C8, C12	
Awareness and knowledge	C2, C3, C4	C5,10	C8, C11	
Resources		C5, C9, C10	C6, C11	C1
Time	C3	C5	C11	C1
Reliance	C4	C5, C9, C10	C11	
ROI		C5, C10	C8	
Adoption	C4		C6	

Business model and relevance

That one must try to find business models that fit to the service/ product you want to sell and need that there is political impetus for eCommerce are showed in C3.

Strategies as barrier has been addressed in previous research by among others Arendt (2008), Bharadwaj (2007), Chapman (2000), Matthevs (2007), Parker (1995) and Taylor (2004). The need for strategies in ICT in case of using eCommerce will increase is detected in C3. The problem about the strategies according to Arendt (2008) that these are not documented is confirmed in C10. Those enterprises often think they have good strategic ability we have seen in C6 and C10. C11 is an example that enterprises missing ICT strategies but the enterprise did not see this as a barrier. Strategy work can be affected by external factors. This is showed in C7, where the supplier does not allow eCommerce of the product. Cloete (2002), Dewan (2008), Laudon (2011), Ratnasingam (2004) takes up the barrier with the experience of the small customer base when they discuss the barrier relevance. The customer bases negative effects we have seen in the C8.

We have in C3, C4 and C9 seen the necessity to studying customers to achieve real use of e-commerce.

Awareness and knowledge

Awareness and knowledge can be influenced by means of information and how it is designed in accordance with previous studies of Ashrafi (2008), Boekhoudt (2004), Chappell (1999) and Jones (2003). To take advantage of eCommerce the management need information from authorities and providers (Locke, 2004). This barrier has been confirmed in C3 and C10. Employees need to have knowledge about software and the software need to be easy to use (Taylor, 2004). Software as a barrier has been confirmed in C4. In C2, we saw how awareness/skills of both management and employees may be barriers and driver of eCommerce. The barrier is not supported by C9. That knowledge disappear a barrier when one considers that eCommerce is something useful has been showed in C9. In our Cases individuals believe that management is working actively to enhance IT skills of employees. However, some of them consider that microenterprises do not invest enough in training staff on ICT because of the

fear of losing them. Awareness and knowledge as a barrier has no support in C1, C6, C7, C10 and C12. C2, C4, C5, C9 and C11 are examples of where enterprises brought in or are willing to bring in consultants due to lack of knowledge.

Resources

That access to capital is important for ICT usage and eCommerce has been shown by, among others Ashrafi (2008), Boekhoudt (2004), Chappell (1999), Chapman (2000), Dewan (2008), Elsam Mani (2001), Gray (2006), Jacobs (2000), Johnson (2010), Jones (2003) and Stockdale (2004). The danger with high cost has been showed in C1 when the enterprise went back on the DTI ladder from eCommerce to the website because low degree of coverage cost. C5, C6, C10 and C11 are further examples where occurrence of costs has been a confirmed as barrier. The most common types of costs in our cases are software, hardware and ICT services. Software as a cost has been observed in C6, C10, and C11. Taylor (2004) indicates that the difficulties in using the software would be a barrier, as this generates costs, this is supported by C10 and C11, but some microenterprises do not think that this cost is a barrier. In our study C2 will be an example of this. The compatibility and usability of software is considered as a barrier for ICT usage and eCommerce in particular, they have not tried to eCommerce. Kapurubandara (2006), Kotelnikov (2007), Love (2001) and Stockdale (2004) argues that there is a lack of software that suits small businesses, this is contradicted by C2 and C4 demonstrating that appropriate software is available. But this barrier is supported by C10 and C11. In C9 the use of ICT have been showed as a matter of survival, which meant that access to capital and access to consultants are not seen as barriers to investment in ICT and eCommerce, if there is not sufficient knowledge in the enterprise. Infrastructure as a barrier has been addressed by Arendt (2008), Dewan (2008), Kapurubandara (2006) and Kotelnikov (2007). The infrastructure as a barrier to adoption may not be supported by the C1, C4, C6, C8 and C9. However, C9 has shown a desire that infrastructure would be better.

Time

Access of time and the cost of generation when working with websites detected as barriers (Cappman, 2000; Jones, 2003). This is confirmed by the C1, C3, C5 and C11. That time would be barriers to eCommerce are not supported in C6 there the business felt they had enough time to work on ICT projects.

Reliance

Laws as a barrier have been addressed in previous research (Ashrafi, 2008; Boekhoudt, 2004; Chappell, 1999; Gray, 2006; Jacobs, 2000; Kapurubandara, 2006). This has been confirmed in C10 and C11, but was not

pointed out as a barrier in C1. Security as barrier has been addressed in previous research (Bharadwaj, 2007; Dewan, 2008; Simpson, 2004). C4, C10 and C11 are examples when it took up security as barriers. Concerns about changes in the value chain (Johnson, 2010; Love, 2001; Stockdale, 2004) affect reliance have no support in C4. We have not seen that other case show that they feel fear to have integrated system solutions with enterprise that are larger.

ROI

Arendt (2008), Ashrafi (2008), Kapurubandara (2006), Stockdale (2004) and Taylor (2004) has in previous research has shown that the difficulty of calculating and estimate time for ROI are barriers. In C5, C8 and C10 we have got support for this barrier.

Adoption

Barriers around adaption like psychology, structure, culture and change in processes (Ashrafi, 2008; Fichman, 1992; Harindranath, 2008 [b]; Jones, 2003; Kapurubandara, 2006; Kotelnikov, 2007) has been confirmed in C4 and C6.

Addition barriers to adapt eCommerce in microenterprises

In Table 2 we sum up additional group of barriers in microenterprises in our case study that not match with SMEs from the literature review.

Supplier agreement

This barrier we found in C7. Such barriers also mean that other ICT development can be affected when the enterprise is not thinking about the various possibilities for automation when it has this limitation.

Communication and customer strategy

That communication with the customer is complicated in software for eCommerce. The downside to manage contacts with customers is the personal contact and the opportunity for counselling. C4 and C6 proof that enterprises could not communicate in the way they wanted. C12 showed that communication could be a barrier if e-mail is sufficient in the way business is conducted. If you have only few customers it could be a barrier for use eCommerce has been showed in C8.

Table 2. Barriers to adapt eCommerce only in microenterprises.

Barriers	eCommerce	eCommerce via the portal	Not eCommerce	Have used eCommerce
Supplier agreement			C7	
Communication and customer strategy	C4		C6, C8, C12	

Conclusions

The aim of present paper was to find out whether eCommerce adoption barriers in SMEs were applicable to rural microenterprises. The results of our case study show that microenterprises are doing well in using e-mail and websites, but are very limited to more sophisticated ICT such as eCommerce and eBusiness. We have also find addition factors that is more specific for microenterprises that have a more general effects on attitude to adopt eCommerce, not presented in early research.

Based on the present research on rural microenterprises, following conclusions are drawn:

- First of all, the results showed that most of microenterprises adopted the most common e-commerce technologies (e-mail and Internet), rather than as an e-commerce platform to enable online transactions.
- The microenterprises are generally positive about ICT education and did not see this as a barrier to commit eCommerce.
- That microenterprise thinks that ICT and eCommerce is very useful in business.
- Customers, suppliers, industry and government are important drivers of eCommerce for microenterprises.
- The general level of knowledge about ICT and eCommerce needs to be raised.
- That enterprises doing eCommerce perceived laws and ROI as greater barrier than those who represent enterprise that are not initiated eCommerce.
- Infrastructure as a barrier to eCommerce and ICT in decline and virtually nonexistent in developed countries.
- We need to raise confidence in ICT consultants.
- Microenterprise which has not adoption eCommerce or advanced ICT need to see that it will have positive effects on the business if they should be willing to invest on it.
- That there are very few microenterprises that use some advanced ICT-applications. They usually are in contact with word processing, spreadsheets and finance applications.

Limitations and future research

The limitation of this case study is to focus only on rural microenterprises in Sweden. Moreover, the sample is too small to generalise for all microenterprises environments. It is not possible to make branches specific conclusions. This is a qualitative study, and further research is required to gain a better understanding of barriers in microenterprises. It is possible to validate our results of eCommerce adoption barriers in rural microenterprises to quantify and using our variables in an adaption model like TAM model (Venkatesh, 2000).

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