International Journal of Computing and Digital Systems
ISSN (2210-142X)
Int. J. Com. Dig. Sys. 7, No.6 (Nov-2018)

http://dx.doi.org/10.12785/ijcds/070602

An Analysis of Administrative Management, Financial and Security Barriers in E-Commerce Adoption in Small to Medium Size Enterprises (SME's) in the United Kingdom

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Received 22 Aug. 2018, Revised 25 Sep. 2018, Accepted 21 Oct. 2018, Published 1 Nov. 2018

Abstract: The term 'electronic' means such trading approach can break the traditional limitations of time and geographical distances between sellers and buyers. Either through e-commerce platforms or the self-built websites, the enterprises can advertise their products or services, engage with customers, receive payments and provide online services to customers. There are several known barriers to SMEs in adopting e-commerce approach. In this context, the contribution of this work is to examine administrative management, financial and security barriers in the adoption of E-commerce. Findings from this research can deliver the direct knowledge base for the SMEs' owners and can ease implementation of e-commerce across SME's in the United Kingdom.

Keywords: E-commerce, SMEs, Adoption barriers.

1. Introduction

Electronic commerce in the recent decades has been adopted by more and more companies or sectors to aid in their growth. It is obvious that the concept of e-commerce has been frequently discussed over the recent decades of fast development on internet technologies. Led by some giant companies of internet, the e-commerce industry has benefited numerous Small to Medium-sized Enterprises (SMEs) around the world.

A large part of the difficulties is rooted in SMEs' limited size, which means weak capabilities or limited resources to support their growth or expansion. According to Bijaoui, because they generally do not have economies of scale, they should bear the relatively larger trading, innovation and taxation costs or burdens than those of the large companies (2017, p. 6). This is obviously responsible for their difficulty to grow. In addition to these, some other difficulties should be attributed to the business, legal and regulatory environments. Disadvantageous factors in the external environments can also generate significant obstructions for SMEs to develop.

E-commerce has expanded to the whole world but the SMEs in different countries may encounter different barriers due to respective differentiated conditions of business environment. Particularly, the conditions may differ in the developing countries when compared with the developed countries in many aspects like legal protections and technologies. In due course, this work is to analyze administrative management, financial and security barriers in E-commerce adoption within the SME's in the United Kingdom. The rest of this paper has been organized as follows. In section 2. Related work is being presented. In section 3. Data is analyzed. In section 4 discussion and recommendation are covered while conclusion and future work are detailed in section 5.

2. Related Work

Apart from those comprehensive contributions, some authors pay attention to the analysis into specific British scenarios. For example, in the article Assessment of e-business adoption in SMEs, Ramesh et al. have emphatically explored the attitudinal or cultural barriers in the manufacturing industry of Britain's North East region. He suggested that the lack of trust to e-commerce can be originated from employees' unfamiliarity to the new systems, the mismatch between the old and the new operational activities and the weak applicability of the sample data in training to the firms' real conditions (2008, pp. 627-644). North et al.'s Finance gap to Scottish SMEs focuses on analyzing Scottish SMEs' barriers to seek external funding supports. They suggested that the factors include the problematic e-commerce plan, the bank lending officers' lack of sufficient knowledge to e-commerce, the SMEs' lack of

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clear credit history and the unwillingness of owners to supply the collaterals with the properties of their own or the companies (2010, pp. 173-192). Tucker and Lafferty's Processes and Barriers is a case study on a British SME, which especially made the human resource and the financial difficulties outstanding. They suggested that the firm's e-commerce problems could be attributed to the limited e-commerce managers to take the responsibility, the unsteady cash supports from the government and the weak attractiveness of the firm to specialised e-commerce experts (2004, pp. 20-29). In the article SMEs and barriers to skills development, Lange et al. paid attention to analyze the internal personnel's skills development difficulties in Scotland. He suggested that such factors include SMEs' owners' weak education background, the firms' limited time to reach ROI objectives, the fear to lose talents after systematic training and the restricted financial resources to support the skills development (2000, pp. 5-11).

The newspaper article Small retailers erode UK lead in e-commerce contributes to illustrate some points about owners' attitudes or perceptions to e-commerce. National Statistics Office's document E-commerce and ICT activity: 2016, Fehling et al.'s book Cloud computing patterns and the Cloud service provider Windward's website are helpful to deeply understand SMEs barriers in IT or ICT (Information and Communication Technology) and the related issues with the service providers. The Cloud applications' security concern would also be interpreted, with the use of Lacka et al.'s book chapter Security concern of Cloud-enabled e-commerce. Around the area of legal issues like privacy, consumer rights or business regulation, the usable materials include UNIDO's document National report on e-commerce development in UK, Carter's article E-commerce: the UK's model for a legal European framework andthe legal documents Electronic Commerce Regulations 2002 and Consumer Contracts Regulations 2013.

First, it is clear that SMEs probably do not have enough funds to support the project if they cannot obtain the revenue increase rapidly through it. Such financial difficulties could influence the progress of many aspects in the project, such as technologies and human resources (Thomas et al. 2000, pp. 5-11). Moreover, SMEs are also inherently weak in facing the uncertainties of external cash supports like bank loans or government subsidies (Tucker and Lafferty 2004, pp. 20-29). These form the challenges to the SMEs on how to effectively manage or utilize the cash flows and make the reasonable financial decisions.

3. Data Analysis

The data analysis will be developed around the barriers of administrative management..

3.1 Administrative management barriers

This kind of barriers means the difficulties to manage the administrative affairs related with the e-commerce project. They could be originated from the limited human resources, the inappropriate management strategies and the reluctance to reorganize the management structure.

3.1.1 Limited human resources

The SMEs inherently have limited human resources to work. They would particularly feel the pressure when developing the e-commerce projects. Tucker and Lafferty had illustrated this in the following case study from the paper *Processes and barriers*:

'The Partwell e-commerce project was sponsored for two years by the UK Government, commencing in January 2001. During the first half of 2001 Partwell experienced the loss of two key members of staff. Annette announced that she was pregnant and would leave the company permanently. Nina was offered, and accepted, a more senior position in another part of the country. This simultaneous loss of two key staff was difficult for the company. Their knowledge and expertise would be missed, not to mention their personalities.
Despite this setback the momentum for the project had developed to such an extent that the remaining staff continued to work with enthusiasm. By this time they were gaining confidence in using the new system and were seeing how it could make a tangible difference to their jobs. By January 2003 two websites had been deployed onto the internet. Although online transactions were part of the original project plan, by the completion of the project in January 2003, no such facilities had been implemented. Anthony had already committed to taking on other consultancy projects in Europe and could only provide Partwell with limited support. Ashley had become intensely involved in negotiating with new contacts in South Africa. This often required him to travel abroad. Consequently there was no one within the company who had the technical expertise to further develop the websites. With the loss of Anthony, Nina and Annette, and with Ashley being heavily committed to other projects, there was no one to champion the e-commerce project' (2004, p. 27).

In the case, the company lost several key staffs due to other companies' attracting of talents, the simultaneous working for multiple tasks and the female staff's pregnancy.

Table 3.1: Importance of the internet for growth by sector and strategic intent. *Source*: Levy et al. 2005, p. 8.

Strategic Intent	Sector	Unimportant (%)	Marginally Important (%)	Moderately Important (%)	Very Important (%)
Market Penetration	Manufacturing	25	28	21	25
	Wholesale/Retail	21	29	21	29
	Business Services	6	24	43	27
	Average	**17**	**27**	**30**	**27**
Product Development	Manufacturing	7	28	41	24
	Wholesale/Retail	13	23	43	20
	Business Services	4	17	39	35
	Average	**8**	**23**	**41**	**26**
Market Development	Manufacturing	19	44	19	19
	Wholesale/Retail	0	58	33	8
	Business Services	20	13	20	47
	Average	**14**	**37**	**23**	**26**
Diversification	Manufacturing	24	38	29	9
	Wholesale/Retail	22	28	28	22
	Business Services	6	18	18	59
	Average	**18**	**29**	**25**	**30**

Thus it is clear that there can be various reasons to make the human resource pressure heavier during the period of developing e-commerce. The SME needs those key staffs to shoulder the important responsibilities.

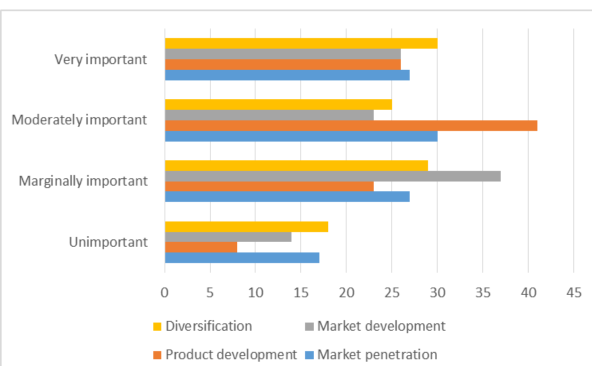

Figure 3.1. Graph 1: Importance of internet in different intents for SMEs averagely. *Source*: Levy et al. 2005, p. 8.

The figure 3.1. graph 1 is drawn from the table 3.1 in the paper *Enablers and inhibitors.* The table 4.3 reflects that different sectors have different strategic focuses on the Internet. Figure 4.3. graph 1displays the relevant information more clearly from analyzing them averagely. It indicates that the intents for diversification and product development are typically important because their percentage performance are rated the highest generally. However, the diversified working projects would obviously increase the human resource pressure. The product development also need the firms to allocate extra tasks or projects to the employees. The heavy workloads of the key staffs may gradually reduce the working efficiency of the firm unintentionally, which would limit the e-commerce further progress.

3.1.2 *Inappropriate management strategies*

The daily management to the different working units may face problems when implementing the e-commerce solution. In the paper *Inventory management challenges*, Patil and Rajiv Divekar take the inventory management issues as an example to illustrate the possible management problems. To the listed issues of demand fluctuation, reverse logistics and stock-out (Patil& Rajiv Divekar 2014, p. 569), the key is to utilize the supply chain management system to track the items and the business analytics software like Tableau to analyze the customer data or predict the selling tendency. If the SMEs are not proficient on these, it would be highly possible for them to implement the inappropriate strategies to manage the daily works. Then they would feel very stressful to react to the electronic market changes or demands. Therefore, if the SMEs decide to adopt e-commerce, they should rapidly familiarize themselves with the relevant systems or software. For example, the flexible using of e-CRM (Customer Relationship Management) system could increase the firms' knowledge to the markets and customers. Then they can more accurately know how to produce the customized goods or implement the productive selling strategies.

3.1.3 *Reluctance to reorganize the management structure*

The SMEs may also not prefer to reorganize their management structure dramatically due to a new initiated project. In the figure 3.2. graph 2, it is obvious that the mean value 2.28 of the last variable is the number closet to 3. Based on the rules in table 3.1., it indicates that compared with introducing marketing goods or products, the SMEs are most not willing to introduce the reorganization of the management structure.

The underlying reason should be the perceived management complexities due to the changes, which has the possibility to reduce the firms' working efficiency. Such risk of management chaos could inhibit the intentions to utilize a large amount of companies' resources to develop e-commerce.

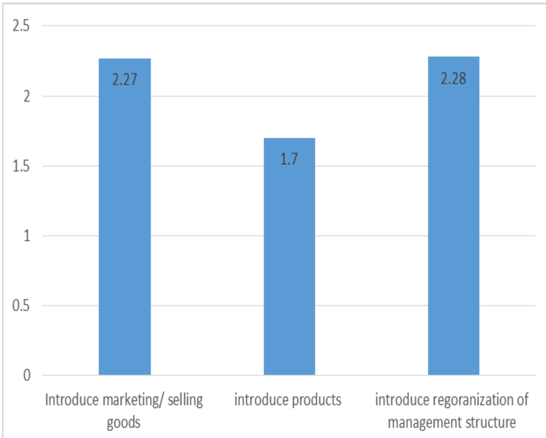

Figure 3.2. Graph 2: SMEs' management rearrangement preference reflected in the mean values *Source*: Nguyen & Wolfe 2015, p. 123.

3.2 Financial barriers

This kind of barriers refer to the firms' disadvantageous situations on funds, which could significantly restrict the progress of the e-commerce projects. The related barriers would be analyzed from two aspects, respectively the companies' rising financial burdens and the difficulties to seek external funding supports.

3.2.1 Companies' rising financial burdens/ costs

The following table, from the paper *Total life cycle costs of e-commerce* has listed the various costs that could be generated by the e-commerce projects.

Phase	Tangible costs	Intangible costs
Adoption		Management time—deciding whether to adopt or not to adopt, planning for Internet presence
Acquisition	Hardware—PC workstations, transaction servers, database servers, web servers, network communications (routers, bridges, hubs, switches, gateways), high speed lines	Management time—identifying vendors, selecting vendors, managing the contract, selecting consultants
	Software—browsers, web server s/w, transaction server s/w, security s/w (e.g. SSL, firewalls), shopping cart s/w, back office integration, bank gateways	Opportunity costs—the opportunity foregone by not investing resources elsewhere
	Facilities—the physical space used to house the infrastructure and people (e.g. data centres and operations)	
	Consultancy	
Implementation	Labour—programmers, application developers, analysts, operators, project managers	Transfer data to Internet based system
	Consultancy	Loss of flexibility due automation
	Planning of web site—content creation and co-ordination	Reduction of knowledge base
	Design of web site	Organisation costs e.g. reallocation of duties
	ISP (internet service provider) initial charges	Resistance to change
	Domain name registration	
	Installation of high-speed lines	
	Develop and delivery of staff training	
Usage and maintenance	Labour—salaries paid to maintain EC systems	Loss of productivity due to employee learning curve
	Security costs	Indirect cost of redundancy
	Testing	Indirect costs of systems failure
	Cost of system failure	Cost of staff time attending training classes
	Insurance to cover cost of system failure	
	Hosting the site	
	Costs of replacing/upgrading existing technology	
	Enhancing older system	
	Making changes to site	
	ISP ongoing charges	
	On-going training	
	Data storage	
Evolution	Cost of system upgrades	
Retirement		Management time
		Opportunity costs

Table 3.2: Overall cost for e-commerce developments. *Source*: Eoin& Fergal 2002, p. 195.

The table makes it clear that the rising costs due to the projects would arise in every stage of the developments. For example, in the initial period, the SMEs need to update their hardware infrastructures, subscribe for software services, dispose the old equipment and possibly pay for the consulting services as well. Once the e-commerce projects work, they may also need to cover the costs of the new IT staffs, the experienced managers to lead the projects, the possible system failure, the system updating and the website changes.

Many of these could make the financial burdens of the SMEs heavier than before. As suggested in the paper *Barriers to the use of patent information*, the SMEs probably have limited time and money to cover those additional costs from the new projects (Hall 2000, p. 95). They face the large possibility to become bankrupt before starting to earn profits from the projects, which has also been illustrated in the following figure.

Phase	% of respondents*
EC implementation	65.0%
EC operation and maintenance	57.5%
EC development and maturation	45.0%
Idea generation and investment appraisal	37.5%
Acquisition of the necessary equipment	32.5%
EC retraction	10.0%

Figure 3.3: Cost requirements along the e-commerce lift cycle phases. *Source*: Cohen &Kallirroi 2006, p. 52.

The figure can be transformed into more visualized graph to analyze as the following.

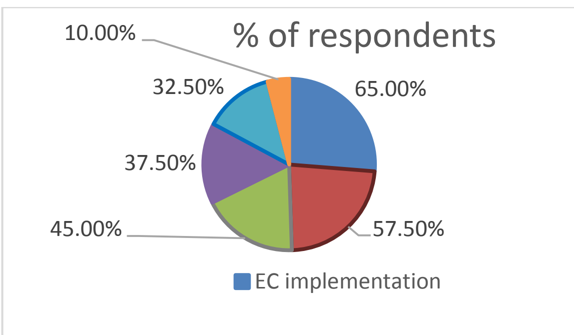

Figure 3.4. Graph 1: The comparison between different EC phases' cost requirements. *Source*: Cohen &Kallirroi 2006, p. 52.

The largest percentages in the graph are 65% and 57.5%, which indicates that the first two phases of implementation and operation or maintenance have larger cost requirements than the later, based on the respondents' feedback in the survey. Therefore, it is highly possible to the SMEs to fail to progress successfully to more mature stages because of the large cost pressure initially. Thus this kind of barrier is also challengeable for these companies.

3.2.2 Companies' difficulties to seek external funding supports

Seeking the external funding supports should be another significant barrier for the SMEs. That is illustrated in the following figures from the paper *Debt finance gap*, which was extracted from a telephone survey to the SMEs who attempted to look for the funding externally.

	Scotland		UK	
	No.	%	No.	%
Bank overdraft	78	7.7	604	6.1
Bank loan	121	11.9	1160	11.7
Mortgage	12	1.2	213	2.2
Total bank finance	**190**	**18.7**	**1837**	**18.5**
Equity finance	6	0.6	57	0.6
Venture capital	2	0.2	20	0.2
Lease/HP	39	3.8	399	4.0
Grant	32	3.2	214	2.2
Loan finance company	4	0.4	74	0.7
CDFI	7	0.7	42	0.4
Business loan	6	0.6	36	0.4
Government loan	7	0.7	20	0.2
Asset finance	3	0.3	40	0.4
Credit card	5	0.5	18	0.2
Factoring	2	0.2	34	0.3
Private loan (e.g. family)	6	0.6	53	0.5
Charity & lottery Funding	2	0.2	16	0.2
Other	2	0.2	70	0.7
Total	**296**	**29.2**	**2764**	**27.9**

Table 3.3: Type of external funding sought by firms taking part in the survey in 2006. *Source*: North et al. 2010, p. 178.

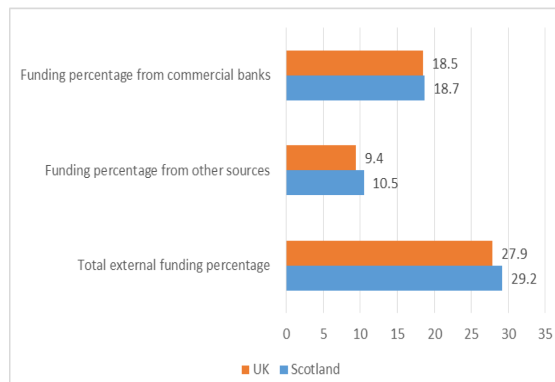

Figure 3.5. Graph 4: External funding situation in UK and Scotland . *Source*: North et al. 2010, p. 178.

The table 3.3. has listed the detailed data to nearly every external funding sources. The figure 3.5. graph4, drawn from table 3.3 may display the core ideas more clearly. It is easy to find that there are only 27.9 % of the surveyed SMEs in UK who successfully obtained the external funds. To Scotland, the percentage is a little high to 29.2. Thus it is obvious that the external funding sources posed the limitations to the SMEs. It is also notable that within those institutions, the commercial banks are the major suppliers of the funds to the SMEs. The percentage is 18.5 to UK and 18.7 to Scotland. However, even if the banks were more generous than the other financial institutions, they were also complained by the companies due to the following reasons.

Table 3.4: Main complaints about the bank lending process in the survey in 2006. *Source*: North et al. 2010, p. 182.

	No.	%
No complaints	13	33
Long delays	8	21
Misleading information	5	13
Confusing process	4	10
No links to alternative finance	4	10
Lack of understanding	3	8
Expensive process	2	5
Total	39	100.0

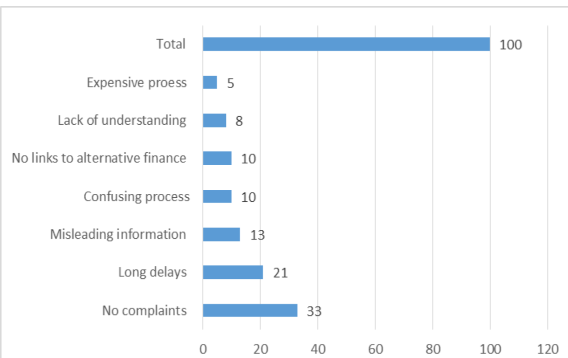

Figure 3.6. Graph 5: Percentage visualization of customers' feedback. *Source*: North et al. 2010, p. 182.

The table 3.4. has recorded the survey's data to the customers' feedback to the bank leading process. The figure 3.6. graph5, drawn from table 4.8 may give a more visualized understanding to the data. It is clear that although 33% of the interviewees did not have complaints to the bank leading process, the others have given various reasons to complain. Typically, the reasons include the staffs' delay to response, the misleading information and the confusing procedures. The SMEs may need to overcome all of these factors to get the funds.

Table 3.5: Time taken to receive bank funding decision. *Source*: North et al. 2010, p. 183.

	Unsuccessful		Successful		Total	
	No.	%	No.	%	No.	%
Up to 1 month	3	23	5	28	8	26
2–3 months	2	15	3	17	5	16
4–5 months	0	0	5	28	5	16
6–11 months	2	15	4	22	6	19
12 months plus	6	46	1	6	7	23
Total	13	100	18	100	31	100

Table 3.5. has recorded the survey's data about the time length to receive the bank funding decisions for the customers. The following graph, drawn from the table can make it easier to grasp the key insight.

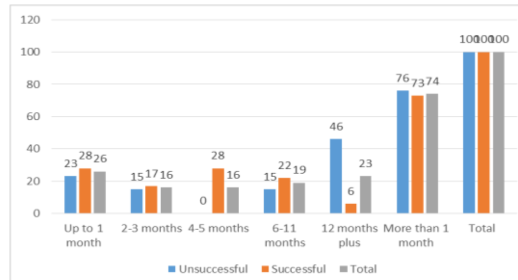

Figure 3.7. Graph 6: Percentage representation of the time taken to receive bank funding decision. *Source*: North et al. 2010, p. 182.

From the graph, it is clear that the SMEs may need to wait for several months or even one year to obtain the funds because generally 74% of the SMEs received the funding decisions more than one month after the initial application. Maybe, the SMEs were weak in the projects' plan, the credit history or the risk evaluations from the view of the banks' staffs.

3.3 Barriers of security-control

Lastly, there are also some security issues that may negatively influence the SMEs' e-commerce developments, mainly the IT security risks, the B2B market risks and the B2C payment risks. If the SMEs cannot control them well, they would probably be stuck during the developments.

3.3.1. IT security risks

These risks refer to the potential technical security problems in the information systems that can cause SMEs suffer losses. The IT security risks are particularly challengeable for the newcomer firms to control because the transformation to the electronic markets would require much more works operated on the digital systems than before.

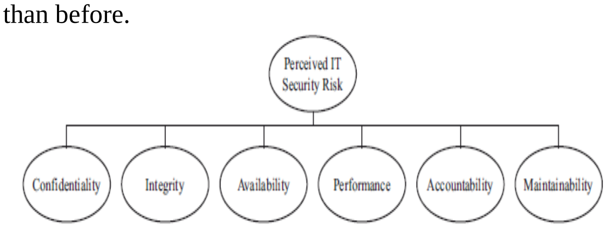

Figure 3.8: The category of the IT security risks. *Source*: Ackermann 2013, p. 35, 44.

Figure 3.8., extracted from the book *IT security risk management* has categorize the risks into six types, respectively about data confidentiality, partners' integrity, technological availability, system performance, partnership accountability and system maintainability. Because the SMEs probably do not have strong technical capabilities, they may need to subscribe for the cloud computing services and ask for the management helps from the consultancy firms.

Table 3.6: The ten highest rated IT security risks of Cloud computing. *Source*: Ackermann 2013, p. 82.

Short Risk Description	Dimension	Mean
Identity theft	Accountability	5.289
Attacks against availability	Availability	5.252
Supplier looking at sensitive data	Confidentiality	5.231
Disclosure of data by the provider	Confidentiality	5.063
Disclosure of internal system data	Confidentiality	5.046
Network performance problems	Performance	4.889
Unintentional downtime	Availability	4.796
Eavesdropping communications	Confidentiality	4.707
Insufficient logging of actions	Accountability	4.669
Proprietary technologies	Maintainability	4.630

Figure 3.8.. Graph 1, drawn from table 3.6. has delivered the information more clearly. The risks of identity theft, attacks against availability and suppliers' access to sensitive data are rated the highest according to their mean values. Therefore, the identity and sensitive data are those especially needing to be protected in the database. The network security should also be effectively controlled by the relevant software. However, it is not sure whether the SMEs can perform well in all of these significant factors, which is important for a safe internet environment.

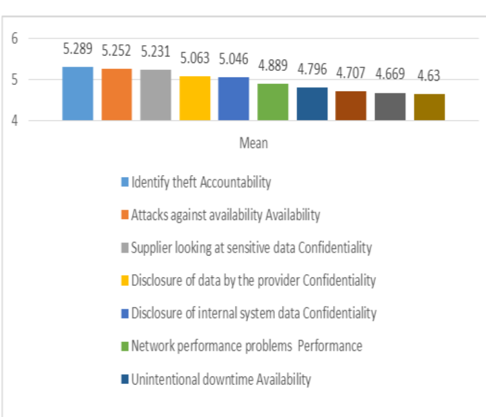

Figure 3.8. Graph 1: Visualization of the different IT security risks' significance *Source*: Ackermann 2013, p. 82.

3.3.2. B2B market security control

In addition to the IT security, the SMEs also need to control the risks embedded in the B2B electronic markets. In the paper *Electronic market systems*, the author suggested that the significant risk is in the interactions with the counterparties (Lee & Clark 1997, pp. 120-121). Because they are operated online, the SMEs cannot physically evaluate the materials from the suppliers. The information or images displayed by the suppliers are also possible to deceive the SMEs about the real qualities. As the newcomers, the SMEs probably do not know how to protect their rights or benefits properly in the electronic markets. Besides, the money transfers to the people who did not meet face-to-face with the SMEs also post the money security risks in the transactions. Therefore, if the SMEs cannot control such factors well, they may suffer the losses in the markets.

3.3.3. B2C payment security control

In the B2C markets, a typical security risk is in the transactions or payments made by the individual consumers. Ruch and Sackmann has listed the possible risks in the common e-commerce payment methods and the comparison of their occurrence probability in the following tables.

Table 3.7. Payment system risks in the e-commerce payment methods. *Source*: Ruch & Sackmann 2012, p. 108.

Payment system	Source of system risks
Cash before delivery	No risks for e-tailers
Credit card	Inaccurate credit card data
	Exceeded card limit
	Chargeback (payment revocation)
Cash on delivery	Incorrect delivery address
	Undeliverable mailing, customer not available
	Hoax orders
Direct debit	Incorrect banking accounts
	Exceeded account limit
	Revocation of a debit entry
Purchase on account	Missed term/maturity of payment
	Incorrect billing address

The table 3.7 shows that in this payment system, the consumers may incorrectly input the terms, the maturity of their bank cards or the billing address into the independent payment account. Regarding the debit or credit card payment systems, the card-users may fail to pay for the products due to the balance or credit limit, the inaccurate data, the payment revocation etc as indicated in the table 3.7. Manual handling could generate any of these errors, which would cause the payment problems or even failures. Thus the payment security should be effectively controlled by the companies.

4. Discussion and Recommendations

In this section discussion and recommendations in the light of data analysis will be presented.

4.1 Discussion

Although the analyzed barriers are interrelated to some extent or from some perspectives, each of them has distinct significant meanings in inhibiting the successful adoption of e-commerce for SMEs. Next is the discussion to the important findings in each area.

4.1.1. Administrative management barriers

The dominant barrier around this area should be the administrative incompatibility to the development needs of e-commerce. Specifically, the SMEs may lack sufficient or appropriate managers to shoulder the project well. Alternatively, the SMEs may not be willing to drastically change its management structure to push the new project. The companies at this size generally do not have too many employees or too specialized task distribution. A staff responsible for several tasks should be the usual case in SMEs. Thus introducing a new project into the companies will increase the existing staffs' working pressures. Some of them may leave due to the reason. If a significant manager quits well, even if due to other reasons, the progress could be influenced significantly because the SMEs do not have too many appropriate managers to shoulder the project's developments well. About the other barrier factor, the SMEs that previously rely on the traditional business approach often have some managers who develop the traditional way together since the beginning of the firm. Although some of them may be open to accept new working units in their firm, the others may prefer to continue the existing management structure.

Changing the structure would increase the risks of losing balance between managing the traditional businesses and pushing the new approach. If the firm cannot manage well during the transition period, the overall performance would probably decrease. Thus the old managers may prefer not to drastically change the management structure. However, the effective pushing of e-commerce could generate such needs. For example, the SMEs may need to build a new Business Intelligence function in their firm, which shoulders the responsibility to analyze the business opportunities or risks and needs the IT team to provide the prepared data. This working flow of data and intelligence makes the entire company more sophisticated, which could increase the management difficulty to SME.

4.1.2.Financial barriers

The main financial barrier could be understood as the weak financial ability to continuously support the e-commerce developments. Two factors are especially important in this area. First, developing e-commerce needs the companies to use their available funds to cover various costs along the different implementation stages. This increase the pressures to their limited cash flows. However, the costs could be generated from various sources like hiring new staffs, buying new technologies, dispose the old infrastructures or making payments for the overheads. Thus their cash flows face large pressures. Moreover, seeking the external funds are also not easy, even difficult to the SMEs. Although capital markets have many different funding sources, only the commercial banks may deliver the supports to SMEs. However, even to the banks, they often extend their decision time to SMEs' projects, which could largely restrict the firms' implementation of the working plans. Therefore, the funding problems also pose significant pressures to the vulnerable SMEs.

4.1.3. Security-control barriers

SMEs are probably not familiar on how to effectively control their security conditions, either about the internet technologies, the online markets or the payment channels. This is also a kind of barrier to the successful adoption of e-commerce. Because the SMEs probably do not have a powerful IT team, their data management, network stability and system healthiness may not be guaranteed on a high level. This may cause the SMEs lose data, encounter the system failure, network instability etc. The virtual electronic markets also make it possible for the existence of the fraud or unreal information. If the SMEs cannot perceive these, they may suffer the losses because of procuring the inferior materials or equipment. In addition, the consumers in the B2C market may encounter the payment failures due to various manual handling errors or unexpected conditions. This can make the SMEs bear the sales losses that could have been earned. Therefore, the companies need to hold a well control to these risks to ensure its secure running of the e-commerce project.

4.2 Recommendations to the barriers

After the detailed discussion to the barriers, it is necessary to propose a set of recommendations to the corresponding factors.

4.2.1. To the administrative management barriers

First of all, the firms should ensure there are sufficient number of people that can fulfill the immediate tasks in the next stages' implementation plan. Both the managers of the project and the employees responsible for the key functions like data management and digital marketing need to be arranged as properly as possible before the implementation. In addition, the old managers should open their minds to accept the new opportunities and think over how to adjust the companies' management structure, even drastically to strongly support the developments of e-commerce. However, it is also necessary for them to balance it with the potential decrease of the strategic focus on developing the traditional businesses.

The original business model is the basis of the firms to progress further. If the firms cannot perform so well in e-commerce, whilst losing the traditional advantages, they would probably face large pressures on becoming bankrupt. Thus the SMEs should also consider to maintain the normal running of the traditional profitable approaches when discussing to change the management structure. Besides, the top managers should perform well on the following issues. The managers should first hold strong motivations on e-commerce and fully support the brand-building or product-promoting activities. They should also appropriately deal with the partnership with the service providers. Some cooperation issues may have significant influence in the internal business processes. Thus the cooperation problems could bring losses to the SMEs. In addition, the table mentions the needs to automate business processes. This could largely improve the working efficiency and productivity of the companies if implemented well. However, the process automation needs to the leading managers to reconsider the value-creating flow of the companies from purchasing materials, designing products to implementing selling strategies etc. Maybe a Business Analytics (BA) function should be built separately in the SMEs to analyze the market data and provide the valuable business insights to the boss.

4.2.2. To the financial barriers

First, the SMEs should carefully manage their cash flow, which is the key to support the normal financial needs along the different implementation stages, especially for covering the related costs. In addition, the companies should establish and maintain a good relationship with the external funding institutions, especially the commercial banks, which is to make it easier to obtain their financial supports. However, to persuade these institutions, the SMEs need to ensure they have good credit history, trading records, sophisticated project plan and easy-to-understand business models, which can largely lift the possibility to obtain the external funds.

4.2.3. To the security-control barriers

First, the IT team should equip themselves with more knowledge of the new technologies, especially on the ways to ensure the IT security. The IT personnel should also propose the technical needs timely to the managers about updating, uninstalling or reconfiguring the systems. This is to keep the systems on a relatively healthy or even highly-efficient running status. The problems in the robust systems can be immediately perceived, monitored and solved, which would further enhance the systems. To the online fraud risks, the SMEs should equip themselves with more knowledge on the related regulatory rules, mechanisms and techniques. Then the unreal information or even thorough fraud interactions could be recognized in advance or solved effectively even if the negative influences have appeared. Besides, the SMEs should provide detailed but easy-to-read guidance information on the payment webpages to inform the correct ways to operate the payment procedures. The typical errors that may occur should also be mentioned emphatically to help the consumers to avoid the possible mistakes during the payment.

5. Conclusion and Future Work

This work has evaluated Administrative Management administrative management, financial and security barriers in the adoption of E-commerce within SMEs in the United Kingdom. Research findings in this paper show that in developing e-commerce, the SMEs are typically short of the available managers, the appropriate management strategies and the determination to reorganize the company structure. All of the three factors are crucial even if the companies may not be so weak in the other barriers. The SMEs face the significant financial pressures on covering the new costs and obtaining the external funding supports. The costs about e-commerce could arise in many different aspects from each implementation stage. The various external funding sources generally put limitations on SMEs' projects, even if they are the commercial banks, the scanty institutions to lend the funds.

The SMEs' security-control pressures are mainly on the IT running risk, the B2B market's risk and the B2C payment risk. The companies who are not so familiar with the new technologies, the electronic markets or the payment methods may not capable enough to deal with all of them properly, typically data security, online fraud and payment failure. Any future work may investigate other barriers as a part of possible further expansion of this work.

ACKNOWLEDGMENT

Research findings as presented in this paper are the result of the MSc dissertation project entitled "E-commerce adoption barriers for Small to Medium Size Enterprises (SMEs) in the United Kingdom" conducted at the University of Warwick under the supervision of Dr. Humayun Bakht.

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