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The Role of Gender in the Perception of barriers to E-commerce Adoption in SMEs: An Australian Study

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Abstract

The association between e-commerce barriers and gender has not been explored in-depth, even though it has implications for the adoption of this technology. This paper aims to add insight into how male and female SME owners/managers perceive different e-commerce barriers. The findings of a survey of 207 SMEs in Australia are presented, and show that females perceive technical issues to be a more important barrier than organisational issues. By contrast, male SME owners/managers are more concerned with the suitability and fit of e-commerce in the organisation, implying the need for a different focus in e-commerce initiatives. Additional findings show a greater differentiation of barriers within male owned/managed SMEs, which suggests the need for more customised e-commerce adoption program in these organisations.

1. Introduction

An examination of most areas of business research shows that one inevitable question that is raised is the question of gender. These studies range from the ability to utilise mathematics to coping with stress in the workplace. In the area of small business, the past 20 years has seen a shift away from the traditional male-dominated economy that centred on manufacturing, towards a more service and retail-based economy that has seen a substantial increase in the participation of females [8, 33]. Not only has there been a rise in the participation of females in the workforce, but the advent of affordable technology has led to a more flexible method of work and a greater global participation by the workforce. While these trends may have led to a greater 'equality' in the workplace, a number of authors [6, 18, 31] have observed that there is a paucity of data concerned with the effects of gender differences on the adoption of e-commerce in SMEs.

A number of studies have shown that despite government support for e-commerce adoption by small businesses, it is mainly the larger businesses that have reaped the benefits of this technology [30]. In contrast, the rate of e-commerce adoption in the small business sector has remained relatively low [20, 27, 36[. This sluggish pace of e-commerce diffusion into small businesses has been attributed to various barriers or impediments that are faced by these organisations. A number of different e-commerce adoption barriers have been documented in research studies [17, 28, 29, 30].

This paper presents a study of 207 Australian SMEs. In particular it examines the differences in perception of barriers to e-commerce and the factors affecting those perceptions (male owner/managers versus female owner/managers). The paper begins begins by examining the nature of small businesses and identifying features that are unique to the sector in order to set the context for the study. This is followed by a literature review of e-commerce adoption barriers and relevant gender studies. The research methodology is subsequently presented and followed by the statistical analysis of the results. Results are discussed and conclusions drawn.

Small Business

There are numerous definitions of what constitutes a small business. These are primarily based on two factors: the number of employees in the organisation and the annual revenue. In Australia, the Australian Bureau of Statistics defines a small business as an organization which employs less than 20 individuals.

Of particular importance is the fact that small businesses are not simply scaled down versions of large businesses [41]. Although size is a major distinguishing factor, small businesses have a number of other unique features that set them apart from larger organisations. These include:

- Higher rates of failure [14]
- Often inadequate transaction records [24, 34]
- Short-range management perspective [5, 40]
- A reluctance to invest in information technology [39]
- A lack of technical knowledge in small businesses [21]
- A strong desire to remain independent [9, 10]

These features are related by nature to some of the reasons why small businesses face difficulties in implementing e-commerce. For example, the lack of technical knowledge has a direct impact on e-commerce adoption. The following section will examine the e-commerce adoption barriers identified in previous studies.

E-commerce Adoption Barriers

As already indicated, there are a number of reasons why many small businesses have not adopted e-commerce. Amongst the reasons found by previous studies are the high costs and complexity of implementation, resistance to change, lack of resources, security concerns and the unsuitability of e-commerce to the small business. The results of

previous research in this area have been summarised in Table 1.

Table 1: Summary of e-commerce adoption barriers in small businesses

Barriers to E-Commerce Adoption	Related Literature
High cost of implementation; Internet technologies too expensive to implement	[15, 17, 28, 30, 36
E-commerce is too complex to implement	[12, 29]
Small businesses require short-term ROI and e-commerce is long-term	[17, 23]
Resistance to change because of the fear of new technology amongst employees	[17, 36]
Preference for and satisfaction with traditional manual methods (phone, fax, etc)	[17, 37]
Lack of technical skills and IT knowledge amongst employees; Lack of computer literate/specialised staff	[15, 17, 29, 30, 36]
Lack of time to implement e-commerce	[17, 36, 39]
E-commerce not deemed to be suited to the way the organisation does business, or the way our clients do business	[13, 15, 26]
E-commerce not deemed to be suited to the products/services	[13, 26]
E-commerce perceived as a technology lacking direction	[17]
Lack of awareness about business advantages/opportunities e-commerce can provide	[15, 29]
Lack of available information about e-commerce	[17]
Concern about security of e-commerce	[13, 28, 29, 30, 36]
Lack of critical mass among customers, suppliers and business partners	[13]
Heavy reliance on external consultants (often considered by small businesses to be inadequate) to provide necessary expertise	[17, 36]
Lack of e-commerce standards	[35]

Not only does there appear to be a number of reasons given by small businesses for not adopting e-commerce, but a number of studies have shown that business characteristics appear to impact on the perception of these reasons/barriers. Studies [2, 11, 22, 38] have shown that business size is associated with the perception of e-commerce barriers. Barnir & Smith [1] and Schindehutte & Morris [32] found that market focus was associated with the perception of barriers, while Tetteh & Burn [34] point to an association with attained levels of education of the owner/manager. In more recent studies [18, 19], membership of small business strategic alliances appear to be associated with the perception of barriers. This paper focuses on the role of gender in e-commerce adoption.

Gender and Small Business

A number of studies have examined the role of gender and the ownership/management of small businesses. Studies in Europe, Scandinavia and the US [3, 4, 6] showed that females saw the small business sector as a means of circumventing the 'glass celing' and noted that the growth of females in the sector was over four times that of males.

Several studies [6, 7, 31] have shown that females find it more difficult to attract finance, despite the universal non-discriminatory policies. These same studies found that either by design or by consequence, females used approximately 33% less start-up capital than males.

An examination of the literature surrounding gender differences and management style in the small business sector has shown that female managers of small business were more comfortable with giving instructions to staff through informal conversation than were their male counterparts. Indeed, while the male managers stressed the role and use of power, female managers stressed the importance of interpersonal communication.

A number of studies [6, 31] suggest that that females appear to be less welcome in social business networks often resulting in a reduced ability to use network partners to gain finance or attract technical or marketing assistance. This stands out in contrast to females having better interpersonal communication skills.

Finally several studies have examined the adoption of e-commerce in small businesses across the two genders. Kolsaker & Payne [16] examined differences in the perception of privacy and security and found no significant differences (male vs female). Perez et al [25], in a study of 112 Spanish small businesses showed that those owned/managed by females were more concerned with technical difficulties compared to those owned/managed by

males. The present research aims to add further insight into the existing knowledge.

Methodology

This paper has two aims. Firstly to determine whether SMEs owned/managed by females perceive the importance of barriers differently to those owned/managed by males. The second aim of the paper is to determine whether different factors are associated with the perception of barriers to e-commerce depending on whether the business was owned/managed by a male or a female.

A series of interviews were conducted with owner/managers of SMEs to determine whether the barriers shown in Table 1 were relevant and complete. All barriers were found to be relevant and no others were forthcoming.

A survey instrument was developed to collect data from small business owners/managers in three areas of Australia (The Hunter, The Illawarra and Western Sydney). A total of 325 interviews were conducted by telephone, with respondents chosen at random from the telephone book. Respondents were asked about the age of the business (less than a year, 1-2 years, 3-5 years, 6-10 years, 11-20 years, more than 20 years); the size of the business (0 employees, 1-9 employees, 10-19employees, 20-49 employees, 50-199 employees); the market focus (local, regional, national, international); the business sector (industrial, service, retail, finance) and whether the business was part of any alliances. Respondents were also asked the gender and educational attainment (High School, TAFE, University) of the owner/manager. The results of the study are presented below.

Results

Of the 325 respondents interviewed 207 (64%) indicated that they had not adopted e-commerce. This result is much higher than comparable studies carried out in the US and Scandinavia [18]. Of the 227 respondents that indicated that they had not adopted e-commerce, 85 (41%) had female owner/managers, and 122 (59%) had male.

A series of two-tailed t-tests were undertaken to determine whether there were any significant differences between the perception of barriers by male and female owner/managed SMEs. Table 2 provides the findings. The significant findings are highlighted.

The second aim of the paper was to determine whether differing business characteristics were associated with the perception of barriers by male and female owned/managed SMEs. A series of linear regressions was undertaken. The significant results are shown in Table 3.

Table 2*:* Comparison of E-Commerce Adoption Barriers (males vs, females)

Barriers	Mean Males	N Males	Mean Females	N Females	t value	Significance
E-commerce is not suited to our products/ services	**3.42**	122	2.99	85	-2.164	**.032***
E-commerce is not suited to our way of doing business	**3.60**	122	3.21	85	-2.002	**.047***
E-commerce is not suited to the ways our clients do business	3.40	122	3.44	85	.121	.904
E-commerce does not offer any advantages to our organisation	3.34	122	3.06	85	-1.442	.151
We do not have the technical knowledge in the organisation to implement e-commerce	3.21	122	3.45	85	1.200	.232
E-commerce is too complicated to implement	2.98	122	**3.36**	85	2.004	**.046***
E-commerce is not secure	2.85	122	3.16	85	1.764	.082
The financial investment required to implement e-commerce is too high	3.03	122	3.38	85	1.835	.068
We do not have time to implement e-commerce	2.97	122	**3.42**	85	2.418	**.017***
It is difficult to choose the most suitable e-commerce standard with so many different options available	2.90	122	**3.48**	85	3.019	**.003****

* p<.05 ** p<.01

Table 3: Linear Regressions of Business Characteristics and Barriers to E-commerce Adoption

Barrier	Male			Female		
	Characteristic	Beta	Significance	Characteristic	Beta	Significance
E-commerce is not suited to our products/ services	Business Size	-.189	.044*			
	Alliance Membership	.198	.028*			
[redacted]						
E-commerce is not suited to our way of doing business	Alliance Membership	.286	.002**	Market Focus	-.222	.045*
[redacted]						
We do not have the technical knowledge in the organisation to implement e-commerce	Educational Level	-.332	.004**			
	Market Focus	-.328	.000***			
[redacted]						
E-commerce is too complicated to implement	Market Focus	-.294	.002**			
[redacted]						
The financial investment required to implement e-commerce is too high	Market Focus	-.252	.006**			
	Education Level	-.275	.016*			
	Alliance Membership	.201	.023*			

* p<.05 ** p<.01 *** p<.001

Discussion

An examination of Table 2 shows a number of interesting outcomes. Firstly, it is interesting to note that male respondents were most concerned with organisational fit, while females were more concerned with technical issues. Five of the ten barriers showed a significant difference (male and female owned/managed). Two of the barriers ("E-commerce is not suited to our products/ services" and "E-commerce is not suited to our way of doing business") were rated higher by males than females. Three barriers ("E-commerce is too complicated to implement", "We do not have time to implement e-commerce" and "It is difficult to choose the most suitable e-commerce standard with so many different options available") were rated higher by females. This is consistent with the findings of Perez et al [25] who also reported that females were more concerned about technical issues, rather than oganisational factors.

The results in Table 3 show that five barriers provide differing associations depending on whether a male or a female owned/managed the business. The barrier "E-commerce is not suited to our products/ services" is associated with alliance membership and business size for males, but shows no association for females. The negative beta value for business size indicates that it is the smaller (male owned/managed) SMEs that are more likely to place a higher level of importance on this barrier. The positive beta value for alliance membership shows that it is more likely to be the member respondents rather than the non-members that place a higher level of importance on this barrier.

The barrier "E-commerce is not suited to our way of doing business" is associated with alliance membership for males and market focus for females. For males, the positive beta value for alliance membership shows that it is more likely to be the member respondents rather than the non-members that place a higher level of importance on this barrier. For females, the negative beta value indicates that it is the local and regional traders, rather than the national and international traders that are placing a higher level of importance on this barrier.

The barrier "We do not have the technical knowledge in the organisation to implement e-commerce" is associated with educational level and market focus for males only. For the market focus characteristic, the negative beta value indicates that it is the local and regional traders, rather than the national and international traders that are placing a higher level of importance on this barrier. For the educational level characteristic, the negative beta value indicates that those who have a 'lower' educational attainment level are more likely to rate this barrier higher than those with TAFE or university qualifications.

The barrier "E-commerce is too complicated to implement" is associated with market focus for males only. For the market focus characteristic, the negative beta value indicates that it is the local and regional traders, rather than the national and international traders that are placing a higher level of importance on this barrier.

The barrier "The financial investment required to implement e-commerce is too high" is associated with three characteristics: educational level, market focus and alliance membership. For the market focus characteristic, the negative beta value indicates that it is the local and regional traders, rather than the national and international traders that are placing a higher level of importance on this barrier. For the educational level characteristic, the negative beta value indicates that those who have a 'lower' educational attainment level are more likely to rate this barrier higher than those with TAFE or university qualifications. The positive beta value for alliance membership shows that it is more likely to be the member respondents rather than the non-members that place a higher level of importance on this barrier. These findings are summarised in Table 4 below. The data seems to suggest that the female owned/managed SMEs are more uniform than those owned/managed by males.

Conclusion

The research presented in this paper suggests that the gender of an SME owner/manager has an impact on e-commerce adoption barriers. The study supports the findings of previous research which indicates that females are more concerned with technical issues, rather than organisational factors. Alternatively, males tend to consider e-commerce unsuitable for their organisation. This has implications for e-commerce adoption initiatives which should broadly be developed to focus on technical training for females, and on case studies highlighting the benefits of e-commerce for males. Other findings in this research show that more diversity within the male managed/owned SMEs in relation to e-commerce barriers, with a clear differentiation between various types of SMEs and e-commerce barriers. By contrast, female owned/managed SMEs were more consistent and uniform in barrier ratings. Again, this has implications for e-commerce adoption which requires more customised programs to be developed for male owned/managed SMEs. Further investigation is required to study the specific details of the associations found in this research.

Limitations

It should be noted that the study presented here has several limitations. The choice of variables selected for the study is somewhat problematic because of the complex nature of adoption barriers which change over time. Furthermore, the views expressed in the surveys are of a single individual from the responding organisation, and only those interested in the study are likely to complete and return the survey. Finally, this is a quantitative study, and further qualitative research is required to gain a better understanding of the key issues.

Table 4: Summary of Findings

Male Owned/Managed	**More concerned about…**
Smaller SMEs	suitability of e-commerce to products/services
SMEs that are members of a strategic alliance	suitability of e-commerce to products/services
	suitability of e-commerce to the way of doing business
	financial investment required to implement e-commerce
Local and regional SMEs	lack of technical knowledge to implement e-commerce
	complexity of implementing e-commerce
	financial investment required to implement e-commerce
Owners with lower levels of education	lack of technical knowledge to implement e-commerce
	financial investment required to implement e-commerce
Female Owned/Managed	**More concerned about…**
Local and regional SMEs	suitability of e-commerce to the way of doing business

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