

Barriers to adopting e-commerce with small to mid-sized enterprises-SMEs in developed countries: an exploratory study in Australia

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Abstract

This paper aims to provide an insight about barriers affecting e-commerce adoption with small to mid-sized enterprise—small and medium enterprises (SMEs) in Australia. The objective of this research is also to consolidate the factors and determine the level of influence, either positively or negatively from the adopter's perspective, on the adoption decision. This study also examines the factors influencing e-commerce adoption decisions in SMEs in Australia. The finding says that one of the most vivid implications of e-commerce for SMEs is the potential for external communication and information gathering for market and product research. The study has found that the historical relationship problems between the business link and SMEs are still causing problems. The findings also show that in Australia, organisations and manager's characteristics, perceived benefits, organisational culture, organisational IT competence, technological competency, IT support, availability of financial support, management commitment/support, external pressure and cost of adoption are significant predictors of e-commerce acceptance in the SMEs and have significant relationships with e-commerce adoption in Australia.

Keywords: E-commerce, barriers, Internet, small to medium-sized enterprises-SMEs, adoption, Australia.

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1. Introduction

E-commerce contains all aspects of life, including personal activities, disciplines and corporations and offers viable and practical solutions for organisations to meet challenges of a predominantly changing environment. E-commerce is the latest methodology that addresses the needs of organisations, merchants and the consumers to cut costs while improving the quality of products and services and increasing the speed of service delivery with a high quality check. On the other hand, computer crime is a term that encompasses a variety of offences associated with the use of information and communication technology. It includes offences where a computer is used as a tool in the commission of an offence [1].

Australia, the fastest growing and developed country in the world, has initiated and implemented a series of national plans and activities to promote e-commerce adoption in both the public and private sectors. It brings a new landscape in conducting business in Australia. Apart from better efficiency, e-commerce in Australia enables enterprises to diversify business strategy, to introduce the newly accepted business model and to embrace globalisation [1].

This section mainly focuses on the research purpose and scope, objectives, research aim and the satisfaction of the research project. This study analyses the current security and privacy barriers and reactions of e-consumers who are using websites in Australia. Then, it develops benchmark strategies to help small and medium enterprises (SMEs) e-commerce companies to provide a more secured atmosphere on websites. This study also involves in the proper investigation of considerable success factors in e-commerce implementation all around Australia [2].

1.1. Purpose and scope

This study mainly focuses on different sectors in the service industry in Australia such as retail, wholesale, accommodation, transport, communication services, finance and banking and property services. Australia is the chosen country for this research because it is the developed country with strengths of ICT and e-commerce industry.

1.2. Objectives

- Finding out the background of ICT industry, e-commerce technology, e-commerce security and privacy issues and business significance in Australia.
- To explain the evolution of e-commerce in Australia from its early years till today.
- Finding out the reasons, challenges and opportunities of the fastest improvement in ICT and e-commerce industry in Australia.
- Identifying the requirements for an effective evaluation in service SMEs.
- Establishing the current position of the frame for measuring e-commerce security and privacy systems accepted in service industry of Australia.
- Categorising common factors for customer and business satisfaction by using e-commerce services in Australia [3].
- Extending a successful assess for e-commerce security and privacy satisfaction (ESPS) for service SMEs in Australia.
- Analysing economic, legal, social, ethical and political issues in the context of e-commerce SMEs in Australia.
- Learning how secured ICT and e-commerce can help in the economic growth of Australia [2].

1.3. Aim of the study

The aim of this study is to identify the barriers that can influence in a better and clear understanding of extents for the prospective development and advance within the e-commerce sector of Australia.

1.4. Research questions

This research aims to try answering the following research questions (RQs) on the information gathered about barriers of e-commerce adoption in Australia:

RQ1: What is the background and current status of IT, ESPS in Australia?

RQ2: What are the reasons for the fastest improvement in IT and e-commerce industry in Australia?

RQ3: What is the current security and privacy status of e-commerce using in service SMEs in Australia?

RQ4: What structures for evaluating satisfaction with e-commerce systems have been accepted in service SMEs in Australia?

RQ5: What is the possibility to develop a successful assessing for ESPS for service SME in Australia?

RQ6: How secured IT and e-commerce can help in the economic growth of Australia?

RQ7: How could Australia build up the opportunity to develop e-commerce security and privacy satisfaction for its own economic growth?

1.5. Significance of the study

This study is very significant for the people of Australia and able to reach the policymakers for the country and forward the concerns in relation to the improvement of business through secured e-commerce sector. ICT and e-commerce are being widely and rapidly used in modern social and economic life. New opportunities and new avenues are opened for people worldwide. All over Australia, people are doing online shopping, online banking and dealing with e-commerce and technology Government agencies will be benefitted because they will learn from the outcomes. Therefore, they can develop legal and ethical policy and procedures. E-commerce [4].

2. Literature review

This part provides the basic and obtainable understanding of e-commerce systems, e-commerce business and security concerns and satisfaction.

2.1. E-commerce

E-commerce is a modern business methodology that addresses the needs of organisations, merchants and the consumers to cut cost while improving the quality of products and services and increasing the speed of service delivery with high-quality checks. E-commerce refers to the buying and selling of products and/or services over electronic systems through the Internet and other computer networks. It combines a range of process such as: electronic data interchange, electronic mail (e-mail), World Wide Web, Internet Applications, Network Applications, Enterprise content management, Instant messaging, Newsgroups, Online shopping and order tracking, Online banking, Domestic and international payment systems, Shopping cart software and Teleconferencing, e-tickets [5].

2.2. E-commerce: key issues

- E-commerce can be used to enhance awareness (e.g., capturing population data), understanding (e.g., explaining changes in food prices) and/or forecasting (e.g., predicting human migration patterns).
- Mediums that provide effective sources of Big Data include satellite, mobile phone, social media, internet text, internet search queries and financial transactions [6].

E-commerce impacts on different sectors are as follows:

- Public administration.
- Legal: privacy, security, liability, cybercrime, intellectual property rights.
- Healthcare and social care.
- Utilities.
- Education and skills.
- Transport and logistics.
- Retail and trade.
- Application and services.
- Technical.
- Social [7].

2.3. Internet usage and e-commerce statistics in Australia



Figure 1. E-commerce in Australia [8]

The communication sector in Australia, including the Internet, has changed significantly within a couple of years. The incentives both from government and public sectors have encouraged this sector massive progress that can hugely be reflected by the volume of the Internet users in Australia. 94% of the Australian population has access to the Internet, around 79% go online everyday and 60% go online multiple times a day [9].

In addition, Table 1 shows more real view and statistics about the Internet users and a total population of Australia.

Table 1. Internet usage and population statistics in Australia: Per Capita GDP in US dollars: United Nations Department of Economic and Social Affairs [10]

Year	Users	Population	% Pop.	G.N.I. p.c.	Usage source
2000	6,600,000	19,521,900	33.8 %	\$19,992 ('00)	ITU
2007	14,729,191	20,434,176	70.2 %	\$21,650 ('06)	Nielsen//NetRatings
2009	16,926,015	21,262,641	79.6 %	\$32,220 ('06)	Nielsen Online
2012	19,554,832	22,015,576	88.8 %	\$43,740 ('11)	IWS
2015	21,176,595	22,751,014	93.1 %	\$64,680 ('14)	IWS

G.N.I.p.c. = Per Capita Gross National Income in US dollars

2.4. Australia B2C e-commerce report 2015-16 at a glance

Australian leads in e-commerce order price per individual with \$143, against global order price of \$143

Table 2. E-commerce foundation and the State of Australian e-commerce, 2016 [11]

19.5 m people are over the age of 15	16.6 m people use the internet (85%)	12.6 m people shop online (65%)
Total GDP of \$1236.2 bn (USD)	77% of the population uses a Smartphone	B2C e-commerce revenue and average spending per e-shopper
E-commerce GDP of 1.80%	Share of mobile in online sales	\$17.2 bn (2013)
		\$19.2 bn (2014)
		\$22.2 bn (2015)
		\$24.2 bn (2016)

Table 3. Frequency of online purchaser (per 6 months) [11]

Number of order placed	% of online consumer (Australia) (%)	% of online consumer (major cities) (%)	% of online consumer (inner regional) (%)	% of online consumer (outer regional) (%)	% of online consumer (remote, outer regional) (%)
1–5 times	52	52	52	52	52
6–10 times	25	26	25	25	27
11–15 times	10	10	10	10	10
16+ times	13	12	13	16	5

2.5. E-commerce sector in Australia

E-commerce is very important and relevant to the economy of Australia—a developed country—in general, and to the export market in particular. It is on the highest stage of progress. It is important that online transaction boosts the GDP growth in such a developed country as Australia.

Australia’s e-commerce can be represented by popular industries:

- E-bay Australia.
- Gumtree Australia.
- eBay.
- Amazon.
- OzBargain.
- JB Hi-Fi Australia.
- Bunnings Warehouse.
- Apple.
- AllExpress by Alibaba.com
- Target Australia [12].

Table 4. Retail e-commerce sales Australia from 2014 to 2018 (in billion USD) [13]

2014	2015	2016	2017	2018
17.4	19.02	20.66	23.31	23.94

Table 5. Where are Australians purchasing from [14]

Australian e-commerce sites	Overseas sites	Australian and overseas sites
53%	19%	29%

Table 6. Most popular payment methods in Australia [15]

PayPal	Credit cards	Credit cards and Money transfer services	Other
12%	25%	53%	9%

Table 7. Top 10 online retailers in Australia [16]

- Big W
- Booktopia
- Brands exclusive
- CatchDay
- DealsDirect
- Target
- Dicksnith
- Gets wines direct
- TheGoodguys
- Harvey Norman

Table 8. E-commerce spending per online consumer in Australia (USD) [16]

2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
\$1048	\$1416	\$1789	\$1789	\$1749	\$2011	\$2108	\$2211	\$2319	\$2411

Table 9. Australian e-commerce users (Age Group) in Australia [16]
73% of online users from age 35–44 have shopped online

Female Age: 18–24	Female Age: 25–34	Male Age: 35–44	Female Age: 45–54	Male Age: 55–64	Male Age: 65+
61%	69%	73%	65%	52%	40%

Table 10. Estimated Australian users on popular social networks [17]

Social networks	Estimated number of users
Face book	10,968,120
Twitter	1,800,000
Linkedin	2,200,000
Tumblr	1,200,000
Pinterst	510,000
Myspace	420,000

Table 11. Australian gender breakdown [18]

2,996	Pages Viewed per month	2,681
81	Number of Sessions	76
82:00	Time spent online per month	73:05

2.6. Why Australia is the biggest market for online retail

- E-commerce is well and truly thriving in Australia at the moment.
- Australians certainly live in the lucky country and the online retail spending figures are proof of that. Here are just some of the recent statistics as follows:
 - 71% of Australian consumers have made a purchase online.
 - Online sales revenue in Australia is expected to reach more than \$37bn during 2013–2015.
 - 53% of users buy from Australian e-commerce sites instead of overseas sites.
 - 73% of online users in the age group of 35–44 have shopped online.
 - \$2,108 is the average spends of each online customer in Australia.
 - Credit card and PayPal remain the most popular payment methods [19].

Table 12. Growth of e-commerce in Australia(in USD Billions) [21]

2010	2011	2012	2013	2014	2015
\$27.00	\$30.20	\$33.00	\$37.1	\$41.00	\$44.00

Table 13. Online Shopping in Australia [22]

Have you ever bought clothes online?	How would you the experience?
Yes: 92%	Good: 54%
No: 8%	Bad: 10%
	Mixed: 38%

Table 14. Popular Categories Purchased Online by Online buyers [22]

74% Travel/ Accommodation	45% CD/Music/DVD	34% Clothes/Jewellery	31% Computers/Software
29% Sport Equipments	21% Electrical Goods	21% Insurance	13% Food/Groceries
9% Lotteries/Betting	8% Home Furnishing	6% Medical Items	3% Others

2.7. Major constraints to e-commerce in Australia

This study highlights various constraints to commerce and trade in general and e-commerce in particular as follows:

- Still very costly.
- Too complicated to implement around all states.
- Does not fill completely with the way customer do business every time.
- Does not offer all the time advantages to the business.
- Does not fit with all types of products.
- Lack of skills and knowledge of proper maintenance.
- Lack of time to implement e-commerce nationally [24].

2.8. Present situation of Cybercrime in Australia

Currently, in Australia, some people send malicious e-mail to different Foreign Diplomatic Missions and other VIPs which sometimes cause a serious problem for the police and also for the government. 7.4 million Australians were victims of cybercrime with an estimated cost to the economy of 1.65 billion USD in 2015. Malicious cyber activity was identified as one of the key national security risks in Australia’s National Security Strategy. From 2015 to 2016, there were more than 700 cyber incidents against government systems requiring a significant response by the Cyber Security Operations Centre. Few groups of people hack the website in Australia. When this incident was published in the media all most all the institution of the government became scared. Then, police arrested some people and they are

now in prison. One of the main website hackers said that nobody should use his acquired computer skills in such criminal activities such as the hacking of important government or private websites.

In Australia, an overall number of cybercrime incidents increased from 2015 to 2016, as targeted attacks, especially targeted e-mails. Small companies also are more targeted than mid-sized and large companies. Currently, cyber terrorists in Australia are only able to attack poorly secured networks but within next 3 years could have the ability to compromise secure network with major disruptive or destructive effects. Cybercrime has also become a pervasive threat to Australia's interests and prosperity. organised crime syndicates heavily are involved because it is a low risk, high reward criminal enterprise [24].

In addition, Table 15 shows a more real view and statistics about the cybercrime presented on Australian electronic devices.

Table 15. Cybercrime presented on Australian electronic devices [22]

Year	2015	2016
Trojans	900,000	1,000,000
Adware	300,000	250,000
Others	200,000	150,000
Worms	500,000	150,000
Password stealing	100,000	150,000
Viruses	70,000	85,000
Exploits	20,000	37,000
Spyware	15,000	17,000

3. The research methodology

In this study, the secondary research method was chosen. It starts with reviewing published secondary sources to provide a wider picture of the topic and a broad investigation of the positive and negative consequences of each issue relevant to e-commerce in Australia, the architects of the consequences and those affected by the consequences.

This study also takes on qualitative method (qualitative research is concerned with the collection and analysis in a non-numerical form, e.g., the collection of people's opinion about an event and the subsequent analysis of this data to establish the range of opinions) based on the interview system to conduct this study including focus group, case study. It also includes the analysis of interviews [8].

3.1. The strategy

In this study, the qualitative approach is chosen as the leading design as it provides a huge number of data. It gives the better approaching into this research field. This study starts with reviewing published secondary sources to provide a wide picture of the topic. New information about the ESPS in Australian enterprises is produced by analysing the secondary data from the documents and other reports. The participants are examined in order to identify the problems of e-commerce privacy and security satisfaction and get the probable solutions from the secondary sources. The subsequently stage of the data collection is under qualitative research approach, in which interviews are conducted to collect important data from ICT, e-commerce and security experts, government and non-government officials, ICT students and university academics [8].

3.2. Document analysis

In this study, it is the best approach to find the general scenario of ESPS by assessing the existing documents and the reports and it will be the best advancement. Also, the researcher compares between the previous and current scenario of the research study. In addition, the researcher goes to the government and non-government organisations to get the data. The researcher also goes to some international agencies to get some statistics or publications. In conclusion, it is straightforward to say that to get a better scenario of the research topic is the aim of document analysis [8].

3.3. The qualitative method

Once, the universities and organisations were finally listed, the key people for the interview were informed by e-mail. To receive consents from the organisations and universities, the researcher has approached to them. In that case, the researcher has contacted with Business and IT faculties to get the positive response. In terms of the student selection process, the lecturers have communicated with the students to volunteer. Once the project was officially approved, the researcher has contacted the Departments/Faculty of the universities by sending a request letter to identify the potential student. Fifteen potential students were selected who responded positively by e-mail and telephone [8].

3.4. Data analysis

All the interview sessions have taken 1 hour per session. Interviews were recorded digitally. Ipad and Laptop were used and Skype was used as the Internet software. All the data were sorted and analysed. Qualitative data analysis with relevant computer software (NVivo) was used. The researcher has categorised all the transcripts into alphabetical order of interviewees Surname. Key issues were checked thoroughly and noted in the list. Also, the researcher has prioritised the contributors and the respondents who have done more contribution [8].

4. Data collection and research analysis

4.1. Qualitative results

This section has defined qualitative results from in-depth interviews. The results have been developed from the potential interviewees such as IT experts, the government and non-government officials, Academics and IT students, identified by I1, I2, I3, I4, I5....., G1, G2, G3, G4, G5....., A1, A2, A3, A4, A5 and S1, S2, S3, S4, S5.....[8]. The interview data mainly about e-commerce privacy and security satisfaction in Australian small to mid-sized business are the subject to the process of analysis resulting in the below vital key issues: the impact of secured e-commerce in Australia, the main reasons contribute strongly for the non-operation of e-commerce in the past in Australia, business restrictions exist in the development of e-commerce in Australia, Australian consumers' concerns about security and privacy issues in e-commerce, economically importance about secured e-commerce to SME in Australia, the economic impact of e-commerce on business costs and productivity and facilitates the development of business of Australia, the current situation of network infrastructure in Australia, industrial solutions to give consumers confidence about security and privacy in e-commerce, the role of the private sector and the public sector in developing secured e-commerce and Australian enterprises role to make fast and easy going communication between the buyers and sellers [19].

4.2. Data collection and analysis

This part has analysed the collected data together with the relevant literature. It has discussed the background of IT, e-commerce security and privacy satisfaction in Australia, about the current views of

the impact of secured e-commerce in Australia, the reasons of the improvement in IT and e-commerce industry in Australia, Australian consumers' concerns about security and privacy issues in connection with the implementation of e-commerce, Australian consumers' presence in the promotion and development of the secured e-commerce among SMEs, industrial solutions to give Australian consumers' confidence about security and privacy in e-commerce, how secured e-commerce can help in the economic growth of Australia, how Australia can build up the opportunity to develop e-commerce security and privacy satisfaction for its own economic growth [23].

5. Research results and key findings

E-commerce is considered as a significant instrument for the development to the Australian economy. Trade over the Internet has not been quickly adopted in Australia due to a number of barriers. It is clear that Australia wants to fit in the move for e-commerce because it has both the potential and at the same time cannot afford to be left out. The Australia government has launched several initiatives to promote for this new methodology of trade such as Australia's e-commerce initiative. This can be vital in outlining important issues, raising awareness and hopefully proposing solutions and action plans to implement solutions for upcoming problems [24].

This section has valued some research key findings which are as follows:

- The Australia government and people are significantly now convinced of using e-commerce in the business environment in order to achieve its aims (e.g., sustainable development).
- E-commerce is the blessings of business and in Australian people's daily life.
- E-commerce is the effective and efficient channel of information in Australia.
- E-commerce has emerging business potentials in Australia and now being used extensively in Australia.
- In Australia, there are many popular website which is extensively used for various e-commerce.
- The current situation of network infrastructure and operations to provide secured e-commerce services in Australia are quite advanced
- High-speed internet, smart phones and tech-savvy young generation are main reasons for the great potential of e-commerce business in Australia.
- A major field of the use of e-commerce in Australia is the retail sector.
- Mobile communication and networks are having a growing impact on the economy of Australia.
- Cybercrime is the most vital reason for some slow improvement in e-commerce.
- Customer satisfaction in online and improving e-commerce is much related and they are the biggest issue in Australia.
- Australian people are very social and usually share their experiences with others in nature and via social media.
- The private sector and the public sector in Australia can make significant progress in secured e-commerce push through its industry association [25].
- Many firms can come up with different levels of e-commerce solutions and opportunity for employment will be broadened.
- E-commerce is steadily transforming the way businesses to be conducted and changing the small to mid-sized enterprises in Australia.
- E-commerce can provide speedier, faster and reliable services to the customers for which they are relatively happy.
- They can improve relationships with customers and boost the economy by increasing efficiency and supporting small to mid-sized new business models and innovation. The private sector and the public sector can make significant progress in developing secured e-commerce push through its industry association.
- E-commerce and increases efficiency in the following sectors: retail; manufacturing; healthcare; public; and life sciences.

- In terms of negative economic issues, maintaining data subjects' privacy is one of the major obstacles for e-commerce.
- Transparency is the key to building user trust, which in turn, leads to a greater amount of e-commerce success [26].

6. Conclusion and recommendation

This study primarily has made suggestions for both service industry and e-commerce solution companies including small to mid-sized enterprises, complete e-commerce privacy and security satisfaction and provide brief and final suggestions for further research. E-commerce as a vehicle to boost up trade, especially international trade has already been recognised by the international business community, especially in developing nations and some of the other developed nation [27].

For achieving the best possible results from the e-commerce, the researcher has offered some recommendations. These are as follows:

- Australia should be connected under fibre optic backbone for e-commerce infrastructure as soon as possible.
- IT experts in Australia should develop in house software for the banking system.
- Every transaction should have some desirable properties like authenticity, confidentiality, unforgivable, integrity and not reusable.
- This study mainly details a number of economic, legal, social and ethical and political, organisational, technology and environmental issues that arise in relation to e-commerce, particularly in relation to processing practices and technologies of e-commerce.
- These issues are important because they illuminate areas where positive issues may be captured, whilst also underlining negative issues that require an address.
- Identifying these issues and understanding the positive and negative externalities they raise is a key to the e-commerce industry moving forward.
- Establish good practice guidelines and share the cybercrime scenes.
- Frequent establishment of a digital forensic laboratory for investigation and detection of cybercrime.
- To train trainers or teachers properly on cybercrime investigation.
- Every transaction should have authenticity, confidentiality and integrity [28].
- Social and ethical issues require recognition so that e-commerce companies and organisations can incorporate fundamental social and ethical values into Big Data practices and policies.
- In order to prevent the negative issues, the principles of the framework require attention to better apply to e-commerce processing.

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