

ELECTRONIC COMMERCE BENEFITS, CHALLENGES AND SUCCESS FACTORS IN THE AUSTRALIAN BANKING AND FINANCE INDUSTRY

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ABSTRACT

This paper reports on part of a wider study into electronic commerce (e-commerce) benefits, challenges and success factors in Australian businesses, with particular reference to the banking and finance industry. The findings indicate that the major benefits to this industry sector from adoption of e-commerce are increased sales, business efficiency, competitive advantage, increased automation of processes and retained and increased customer base. The key challenges identified for the sector include the costs of the technology, lack of e-commerce knowledge, budgeting, acquiring IT skilled people and customer service. Secure transactions were not considered a major challenge by this sector; rather they were regarded as one of the success factors, along with support from top management, a functional and user-friendly web site, partnerships with technology providers and an effective project leader. Participating companies correctly estimated the majority of challenges posed by the adoption of e-commerce, however they did not anticipate the difficulties of acquiring skilled staff to design, implement and manage the IT aspects of the transition.

1. INTRODUCTION

Electronic commerce as a new way of doing business has significant opportunities. It is fast gathering momentum and becoming a reality in Australia as in other parts of the world. The uptake of e-commerce in Australia however is low with only 4% of sales conducted through the Internet and only 6% of business defined by the Australian Bureau of Statistics as 'internet commerce active' (Australian Bureau of Statistics, 2000). Australia lags behind the United States where it is estimated

that by 2002, the e-commerce market will be worth \$330 billion (Fraser, Fraser and McDonald 2000) and by 2003, 42% of all trade will be conducted online (Oliver 2001). In the UK the top 100 companies suggest 20% of their revenue will be generated from e-commerce transactions (Fraser et al. 2000). It could therefore be argued that e-commerce in Australia has yet to make a significant impact in the market place but is moving at a rapid pace in that direction.

The Australian Bureau of Statistics recently surveyed 641,000 businesses on the use of computers and the Internet, including web sites and Internet commerce. The survey found that:

- a higher proportion of large organisations access the Internet and use it for business purposes than small and medium size ones.
- 91% of surveyed businesses use the Internet for E-mail, 85% for information searches
- 44% of businesses access government services, 36% for banking, 18% for ordering goods and services and 15% for receiving orders for goods and services.
- 88% of surveyed companies have company information on their web sites or home pages, 79% advertise their own goods and services, 37% have links to other web sites and 36% are obtaining customer feedback via their web sites.
- 6% of surveyed Australian businesses were classified as Internet commerce active (ie. receiving sales income from orders for goods or services over the Internet).
- the estimated total value of sales or orders, for the year ending 30 June 2000 was \$5.1 billion AUD, and this was dominated by business-to-business transactions (Australian Bureau of Statistics, 2000).

2. BENEFITS CHALLENGES AND SUCCESS FACTORS

The research for this paper was part of a research thesis that examined three key elements in e-commerce from a business perspective, focussing on benefits, challenges and factors leading to success in each area. The research involved a survey of Australia's top 500 companies.

2.1 Benefits of E-commerce

The uptake of e-commerce is influenced by its potential to create business value and by awareness of its participants of the potential benefits (Salnoske, 1997). A major reason for most companies, irrespective of size, to participate in business is to extract some benefit from it. E-commerce is no different. The benefits of e-commerce identified from the current literature are classified in two main categories - tangible and intangible. Table 1 presents the key benefits as described in the literature.

Benefits	Research/literature
Tangible benefits	
Business efficiency	(Fraser et al. 2000; Lee 2001; Riggins, 1999)
Increased automation of processes	(Fraser et al. 2000; Dan et al, 2001).
Transformation of traditional market chain	(Fraser et al. 2000) .
Retained and expanded customer base	(Fraser et al. 2000; Rahul, Biju and Abraham 2001; Turban, et al, 2000).
Reduced operation costs	(Kent and Lee, 1999; Grover and Ramanlal, 2000; Kare-Silver, 1998; Fergusson, 1999).
Acquisition of a niche market	(Riggins, 1999; Rahul et al. 2001)

Intangible Benefits	
Enhancing well-being and education of customers	(Whinston et al. 1997; Lee 2001)
Consumer loyalty	(Lee 2001; Hoffman et al. 1999; Coulson, 1999)
Competitive advantage	(Kalakota et al. 1999; Hoffman et al. 1999; Straub, 2000; Kare-Silver, 1998)
Convenient shopping	(Hannon, 1998; Winner, 1997)

Table 1 E-commerce benefits

2.2 Challenges of E-commerce

To extract benefits from e-commerce, it is important for businesses to overcome the e-commerce inhibitors and challenges. E-commerce challenges identified from the literature are classified as - technological, managerial, and business related and are summarised and presented in Table 2.

Challenges	Research/literature
Technological challenges	
Security	(Koved et al. 2001; Czerniawska & Potter, 1998; Alexander, 1998)
Web site issues	(Watson et al. 1999; Zhang & von Dran 2000; Lee 2001)
Technology issues including costs, software, infrastructure	(Hoffman et al. 1999; Abeyesekera et al. 1999; Rahul et al. 2001)
Managerial challenges	
People and organisational issues	(Hoffman et al. 1999; Feeny 2000)
Obtaining senior management backing	(Feeny 2000)
Business challenges	
Customer service	(Whinston et al. 1997; Alter, 1999; Lee 2001)
Customers' old habits	(Hoffman et al. 1999; Schwartz, 1999)
Legal issues	(Hoffman et al. 1999; Lawrence et al. 1998; de Souza & von Wiese 2000)

Table 2 E-commerce Challenges

2.3. E-commerce Success Factors

To maximise value from e-commerce business must identify and evaluate factors critical to success. The e-commerce success factors identified from the literature are also divided into the same three categories - technological, managerial, and business related and are summarised in Table 3 with the supporting literature.

Success Factors	Research/literature
Technological success factors	
Secure transactions	(Liao and Tow, 2001; Mahadevan, 2000)
Web site functionality and features such as, catalogues, frequently asked questions, CRM, decision support	(Zhang & von Dran 2000; Riggins, 1999; Baron, et al. 2000; Liu & Arnett, 2000)
Payment issues credit cards & e- payment	(Panurach, 1996; Maxwell et al. 1999; Sauer 2000)
Integration of web site to all business	(Sauer 2000; Ruud & Deutz, 1999; McClure, 1998;

processes	Zarowin, 1999)
Adequate resources and appropriate e-commerce infrastructure	(Sauer 2000; Mahadevan, 2000)
Managerial success factors	
Effective project leadership – company vision	(Wilcocks and Plant 2000)
Forming alliances – with suppliers, technology providers, customers	(Riggins, 1999; Coulston, 1999)
Appropriate organisational structure	(Tetteh and Burn. 1999; El Sawy et al 1999)
Business success factors	
Advertising on and off line	(Zarowin, 1999; Minoli & Minoli, 1997; Mahadevan, 2000)
Rapid delivery	(Rutter and Southerton, 2000; Castelluccio, 2000)
Disintermediation	(Mahadevan, 2000; Riggins 1999)
More personalised customer service	(Mahadevan, 2000; El Sawy, 1999; Baker, 1999)
Market responsiveness	(Mahadevan, 2000)

Table 3 E-commerce Success Factors

A significant proportion of the research reported to date has focused on the retail/wholesale sector with little reported work or research on the uptake of e-commerce in the banking and finance industry. Recent Australian research explored from the perspective of Australia's top 500 companies the three key areas of e-commerce benefits, challenges and success factors. This paper focuses on the responses from the banking and finance sector.

3. RESEARCH

From the literature a theoretical framework was developed, (Tables 1 to 3 above), described the benefits, challenges and success factors as they relate to e-commerce. A series of interviews, not discussed in this paper, was conducted with 7 large Australian companies. The case study data helped refine the list of benefits, challenges and success factors companies indicated were important in their move to e-commerce. A survey was developed, based on the refined list and sent to the top 500 Australian companies. This explored with senior managers the extent to which each of the identified factors were anticipated by the company and the extent to which the objectives were achieved.

4. SURVEY METHOD

Drawing on the theoretical framework and the interview data, the survey sought to explore:

- The benefits of e-commerce
- The challenges of e-commerce that inhibit its successful operation
- The success factors of e-commerce

The data gathered from the postal questionnaire responses are ordinal and presented on a Likert Scale. The Likert scale, commonly used in business research (Sekaran, 1992) was used because it allows participants to respond with degrees of agreement or disagreement (Kerlinger, 1986). Participants were asked to rate anticipated benefits, challenges and success factors of e-commerce in their organisations, as well as encountered, identified and achieved benefits, challenges and success factors respectively. The purpose was to explore participating companies' awareness and expectations of e-commerce, prior to their involvement and what subsequently turned out to be the case. The rating was on a scale from 1 (lowest impact or least important) to 5 (highest impact or most important).

The data were measured in an ordinal scale, therefore non-parametric statistical tests were used (Siegel, 1988). Non-parametric tests are described as statistical procedures that use nominal or ordinal-scaled data (Zikmund, 1991; Kerlinger, 1986; Jordon, 1985). Advantages of non-parametric statistical tests are that they typically need fewer assumptions about the data, are much easier to learn and to apply than parametric tests, and are capable of analysing the data inherently in ranks and also of analysing data whose seemingly numerical scores have the strength of ranks (Siegel, 1988).

To establish if there is a significant difference between anticipated and encountered benefits, challenges and success factors of e-commerce in the finance/banking industry, the Sign test was performed. The Sign test looks at the direction of differences between two measures and is particularly useful where quantitative measurements are impossible or infeasible (Siegel, 1988). The Sign test compares the number of positive and negative differences between scores allocated to the same or matched samples (Cramer, 1998). The collated data were analysed using SPSS (Statistical Package for the Social Science) a widely accepted statistical package (Ghauri et al, 1995; Cramer, 1998).

4.1. Response rate

The survey was conducted amongst Australia's top 500 companies according to their Annual reports. Of the 500 companies, 72 were in Finance/Banking industry. 24 useable responses were returned representing a very good response rate of 33.3%.

5. RESULTS

To establish the rank order of benefits, challenges and success factors, in the Finance and Banking industry, the medians were computed. The following tables present their Rank orders, based on median values (and the number of valid answers) for each variable, as well as the Sign Test results (emphasising statistically significant differences between anticipated and encountered benefits, challenges and success factors).

Rank	Success factors	Median	No of cases	Sign T. Signif.
1	Secure transactions	5.0000	22	.453
2	Top management support	4.0000	23	1.000
	Functional and user-friendly web site	4.0000	23	.016
	Partnership with technology providers	4.0000	23	.070
5	Effective project leader	4.0000	22	.125
	Adequate resources (finance & people)	4.0000	22	.001
	Regular update of the content of the Web site	4.0000	22	.344
	Rapid delivery	4.0000	22	.508
9	Responsive and flexible to the market	4.0000	21	1.000
	Being visionary	4.0000	21	1.000
	Responsive and flexible towards new strategies	4.0000	21	.358
12	More personalized customer service	4.0000	20	.146
13	Integrating web site to all business processes	3.5000	22	.625
14	Excelling in communication with customers	3.5000	18	.008
15	The use of new technology	3.0000	23	.375
	Appropriate Organization structure	3.0000	23	.125

	Partnership with service providers	3.0000	23	1.000
	Partnership with suppliers	3.0000	23	1.000
19	Online catalogue	3.0000	22	1.000
	Forming alliances with new partners	3.0000	22	.169
	Payment via credit card	3.0000	22	1.000
22	Cross-functional project team	3.0000	21	.063
	Active role of IT department in organization	3.0000	21	.688
	Online tracking facilities	3.0000	21	.699
	Advert. in newspapers, magazines, radio & TV	3.0000	21	.727
	Electronic payment system	3.0000	21	.375
27	Allowing FAQ on Web site	3.0000	21	.625
28	Appropriate metrics to measure success	3.0000	20	.388
	Online personalized recommendations	3.0000	20	.665
30	Providing online decision support	2.5000	22	.250
	Advertising online	2.5000	22	.289
	Availability of new intermediaries for EC	2.5000	22	1.000
33	Web site listed on critical search engines	2.0000	20	.002
	Comprehensive e-commerce legislation	2.0000	20	1.000
35	Appropriate Sociotechnical policy	2.0000	18	1.000
36	Appropriate packaging	1.0000	19	.375
	Disintermediation	1.0000	19	.625

Table 4 Rank Order and Sign Test for Success Factors

Table 4 indicates that the most commonly identified success factors include secure transactions, top management support, functional and user-friendly web site, partnership with technology provider and effective project leaders. The results of the Sign Test indicated four success factors were not correctly anticipated: these were functional and user-friendly web site, adequate resources, excelling in communication with customers and web site listed on critical search engines.

Rank	CHALLENGES	Median	No of cases	Sign T. Signif.
1	Technology cost	3.0000	24	.180
	Lack of e-commerce knowledge	3.0000	24	.625
	Budget	3.0000	24	.092
	Acquiring IT skilled people	3.0000	24	.021
	Customer service	3.0000	24	1.000
6	Managing change	3.0000	23	.096
	Measuring success	3.0000	23	1.000
	Lack of e-commerce infrastructure	3.0000	23	.180
9	Integrating front-end EC to back-end system	2.5000	24	.549
	Reliable technology vendor	2.5000	24	.581
	Security	2.5000	24	.815
12	Making business known to users	2.0000	24	.774
	Obtaining senior managers support	2.0000	24	.092
	Internet service provider reliability	2.0000	24	.774

	Software compatibility	2.0000	24	.125
	Dealing with intermediaries	2.0000	24	.109
17	Employee resistance towards e-commerce	2.0000	23	.143
	Web site issues	2.0000	23	.375
	Reaching customers in rural and reg. areas	2.0000	23	1.000
20	Current e-commerce legislation	1.0000	24	.581

Table 5 Rank Order and Sign Test for Challenges

From Table 5 it can be concluded that the most frequent challenges encountered in Finance/Banking include technology cost, lack of EC knowledge, budget, acquiring IT skilled people and customer service. The results of the Sign Test indicate that the challenge of acquiring IT skilled people was not anticipated. Companies therefore anticipated correctly all but one of the challenges.

Rank	Benefits	Median	No of cases	Sign T. Signif.
1	Increased sales	3.5000	22	.065
2	Business efficiency	3.0000	22	.013
	Competitive advantage	3.0000	22	.039
	Increased automation of processes	3.0000	22	.581
	Retained and expanded customer base	3.0000	22	.077
	Reduced operation costs	3.0000	22	.000
	Extended application of new technology	3.0000	22	1.000
	Customer loyalty	3.0000	22	.063
	Secure electronic commerce environment	3.0000	22	.109
10	Improved image	3.0000	21	.727
11	Enhanced skills of employees	3.0000	20	.508
12	Reduced inventories	2.0000	22	.002
13	Better knowledge management	2.0000	19	.125
14	Acquisition of a niche market	1.0000	21	.688

Table 6 Rank Order and Sign Test for Benefits

Table 6 indicated that the most achieved benefits included increased sales, business efficiency, competitive advantage, increased automation of processes and retained and expanded customer base. The results of the Sign Test indicated that four benefits that were not correctly anticipated including business efficiency, reduced operation costs, reduced inventories and competitive advantage.

To establish whether there were differences between benefits, challenges and success factors of e-commerce across the 4 industries with the highest response rate a Kruskal-Wallis tests was performed. The Kruskal-Wallis test determined that all of the variations in the finance/banking industry compared with the entire sample is of the kind that is expected among samples from the same population. This coincides with the findings from the semi-structured interviews that the majority of participants are at the same or similar stage of e-commerce and are therefore encountering similar dilemmas.

6. DISCUSSION

To maximise the potential of e-commerce, business must be aware of the benefits, challenges and success factors of trading electronically. This research examined these factors in the Australian finance/banking industry. The main findings of the research presented in this paper are:

- The major benefits of e-commerce adoption not anticipated by the sector are business efficiency, improved image, competitive advantage, increased automation of processes and increased business turnover.
- The key challenges identified for the sector are the costs of the technology, the lack of knowledge of e-commerce, managing the change, budgeting and issues associated with linking back end systems.
- Secure transactions were not considered a major challenge for the sector; in contrast they were considered one of the success factors, along with effective project management, adequate resources, support from top management and rapid delivery of systems.
- Participating companies correctly estimated the vast majority of challenges of e-commerce that lay ahead. Acquiring IT skilled people was, however, one significant challenge that was not correctly anticipated.
- The Australian banking and finance sector identified similar benefits, is facing similar challenges and has identified similar success factors in the adoption of e-commerce compared with the other sectors.

7. CONCLUSION

This study has identified and confirmed the key factors that the finance/banking industry in Australia has indicated are important in maximising the potential of e-commerce. The survey results confirm that the identified factors are not dissimilar across the sectors. For managers and project leaders, the implication of the findings are that those factors identified can be used as a checklist to assist firms in their effective adoption of e-commerce and the maximisation of opportunities.

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