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11-14-2008

Modus Vivendi of E-Business

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Recommended Citation
Kuzic, Joze; Fisher, Julie; Scollary, Angela; Dawson, Linda; Kuzic, Milan; and Turner, Rod, "Modus Vivendi of E-Business" (2008). *PACIS 2006 Proceedings*. Paper 77.
http://aisel.aisnet.org/pacis2006/77

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Abstract

This paper reports on an investigation into relationships between challenges and success factors in e-business, from the perspective of the acknowledged benefits achieved by large organizations operating within the Australian context. To enable organisations to achieve benefits from e-business, it is imperative for companies to recognise challenges before them as well as to identify critical success factors necessary for their success. The outcome of the research reported in this paper is a key set of critical success factors, challenges and benefits that can be used as a modus vivendi to overcome problems by applying appropriate solutions in order to achieve benefits in this area.

Keywords: E-Business, CSF, Challenges, Benefits, Success Factors, Australia

1. Introduction

In order for businesses to achieve benefits from e-business, it is imperative for companies to recognise challenges before them as well as to identify critical success factors necessary for their success. A survey of the top 500 Australian companies explored identified success factors, encountered challenges and achieved benefits of electronic business in organisations. An investigation has been made into the possible relationships between success factors and challenges, as well as success factors and benefits of e-business. After a comprehensive analysis an attempt has been made to develop a unique key set of CSF who is capable of minimising the challenges and maximising the benefits of e-business.

2. Challenges, CSF, and Benefits of E-business

Some of the major challenges, success factors and benefits of e-business identified from the literature are presented in Table 1 as follows.

Challenges	Literature Citation
Obtaining senior management	Sharma, 2001; de la Torre and Moxon, 2001; Chan et al., 2003;

support	Jelassi and Enders, 2004.
Security	Peelpes, 2002; Baker et al., 2002; Ayoade, 2002; Kuzic and McKay, 2004.
Technology	Dearstyne, 2001; Rose et.al., 2001; Noyce, 2002; Kim, 2002; Gibson et al, 2003; Jelassi and Enders, 2004.
Customer service	Wiedmann et al., 2002; Chang, 2003; Schneider, 2004.
Lack of EB infrastructure	Rose et al., 2001; Kuzic and McKay, 2004.
Success Factors	Literature Citation
Secure transactions	Liao and Tow 2001; Peeples, 2002; Totty, 2003; Jelassi and Enders, 2004.
Forming alliances	Au et al., 2001; Reeves et al., 2002; Chan et al., 2003;
Partnership with suppliers	Reeves et al, 2002; Chan et al., 2003; Jelassi and Enders, 2004.
Adequate resources	Gibson et al, 2003; Kuzic and McKay, 2004.
Electronic payment system	Peffers and Ma, 2003; Schneider, 2004.
Benefits	Literature Citation
Consumer loyalty	Wolfinger et al., 2001; Tobias, 2002.
Business efficiency	Freisen, 2001; Griffin, 2000; Gibson et al, 2003; Good & Schultz, 2002. Noyce, 2002 & Ranganathan, 2003;Barnes et al., 2003.
Retained and expanded customer base	Turban et al, 2002; Sarel et al., 2002; Good & Schultz, 2002; Turban et al, 2003; Ranganathan, 2003;Louvieris & Oppewal, 2004.
Competitive advantage	Tobias, 2002; Noyce, 2002; Ranganathan, 2003; Totty, 2003; Bakhru, 2004; Jelassi and Enders, 2004.
Reducing costs	Wolfinger et al., 2001; Ranganathan, 2003; Chan and Pollard 2003; Stockdale & Standing, 2004.
Increased sales	Good & Schultz, 2002; Turban et al, 2003; Schneider, 2004; Louvieris & Oppewal, 2004; Rohm & Sultan, 2004.

Table 1. Challenges, Success Factors and Benefits of E-Business

3. Research Purpose and Method

The purpose of this research was to investigate possible relationships between challenges and success factors in e-business, seen through the lens of the benefits that large organizations involved in e-business have been able to achieve. Furthermore, our goal was to develop a set of key factors that can be used as a modus vivendi to overcome problems by applying appropriate solutions in order to achieve benefits in this area.

In the first phase a comprehensive literature review was conducted. After this phase, in order to see what the state of play among the organizations involved in e-business was, a set of interviews with leaders of e-business in seven large Australian organizations was conducted.

4. Data Collection and Analysis

The subsequent survey of the top 500 Australian companies was conducted using a questionnaire that was developed on the basis of the literature review together with the findings from the interviews. This questionnaire was sent to the e-business leaders of above companies, asking for their views on encountered challenges, identified success factors and achieved benefits of e-business.

The overall response rate for the survey was 22%. Such a response rate was considered acceptable, as it has been established that most mail data collection response rates fall between 5 and 10 percent (Alreck et al., 1985). Falconer et al., (1999) have cited Galliers, (1987) who reported that in the opinion of researchers from the London School of Economics a response rate of around 10% is the most one can expect from a large mail survey.

Data gathered from postal questionnaire responses are ordinal and presented on a Likert Scale. The Likert scale was used because it allowed participants to respond with degrees of

agreement or disagreement (Kerlinger, 1986) or to indicate how they agree or disagree with the statement related to a certain issue (Zikmund, 1991). This scale is commonly used in business research in order to make valuable conclusions (Sekaran, 1992).

Participants were asked to rate challenges, success factors and benefits of electronic commerce in their organisations. This rating was on a scale from 1 (lowest impact or least important) to 5 (highest impact or most important). Such ranking is described as ordinal data (Jordon, 1985; Kerlinger, 1986; Kumar, 1996). Therefore, because the acquired data were measured in an ordinal scale, it was appropriate to perform non-parametric statistical tests (Siegel, 1988).

Non-parametric tests are described as statistical procedures that use nominal or ordinal-scaled data (Zikmund, 1991; Kerlinger, 1986; Jordon, 1985). The advantages of non-parametric statistical tests are that they typically require fewer assumptions about the data, 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).

For further, deeper analysis, non-parametric tests such as the Kruskal-Wallis test, the Sign test and Correlation analysis, as well as computations of median and ranking, were performed. The collated data were analysed using SPSS (Statistical Package for the Social Science), considered an excellent statistical package (Ghauri et al., 1995), also acknowledged as a comprehensive and flexible statistical analysis package with a user-friendly interface in a Windows environment (Cramer, 1998).

5. Findings and Discussion

The sequence of presenting the challenges, success factors and benefits of e-business from the postal questionnaire is shown in the following summary tables. In order to establish the importance of each e-business challenge experienced by participating companies, these were ranked according to computed medians. The rank order is presented in Table 2 below

Rank	CHALLENGES	Median	No of cases
1	Lack of e-commerce knowledge	3.0000	96
2	Technology cost	3.0000	95

2	Acquiring IT skilled people	3.0000	95
2	Lack of e-commerce infrastructure	3.0000	95
2	Security	3.0000	95
2	Making business known to users	3.0000	95
2	Customer service	3.0000	95
8	Budget	3.0000	94
8	Software compatibility	3.0000	94
10	Integrating front-end EC to back-end system	3.0000	93
10	Managing change	3.0000	93
10	Reliable technology vendor	3.0000	93
13	Measuring success	3.0000	91
14	Internet service provider reliability	2.0000	96
15	Obtaining senor managers support	2.0000	95
16	Employee resistance towards e-commerce	2.0000	94
16	Dealing with intermediaries	2.0000	94
18	Web site issues	2.0000	91
19	Reaching customers in rural and regional areas	2.0000	87
20	Current e-commerce legislation	1.0000	91

Table 2. Rank Orders for Challenges of E-Business

From the median values in Table 2 it can be concluded that although the vast majority of companies have encountered the majority of challenges, as confirmed by the semi-structured interviews, their median values differ. The most encountered challenges among large organisations include: lack of e-commerce knowledge, technology cost, acquiring IT skilled people, lack of e-commerce infrastructure, security, etc.

In order to establish the importance of each e-business factor experienced by participating companies, the identified success factors were ranked according to the computed medians. Their rank order is presented in Table 3.

Rank	Success factors	Median	No of cases
1	Effective project leader	5.0000	93
2	Secure transactions	5.0000	89
3	Adequate resources (finance &people)	4.0000	94
3	The use of new technology	4.0000	94
5	Rapid delivery	4.0000	93
5	Top management support	4.0000	93
5	Partnership with technology providers	4.0000	93
5	Payment via credit card	4.0000	93
9	Regular update of the content of the Web site	4.0000	92
10	Functional and user-friendly web site	4.0000	92
11	Cross-functional project team	4.0000	90
11	Integrating web site to all business processes	4.0000	90
13	Forming alliances with new partners	4.0000	89
14	Responsive and flexible towards new strategies	4.0000	87
14	Responsive and flexible to the market	4.0000	87
16	More personalized customer service	4.0000	85
16	Being visionary	4.0000	85
18	Excelling in communication with customers	4.0000	77
19	Partnership with service providers	3.0000	94
19	Partnership with suppliers	3.0000	94
21	Appropriate Organization structure	3.0000	93
21	Online catalogue	3.0000	93
23	Advertising in newspapers, magazines, radio & TV	3.0000	90
23	Providing online decision support	3.0000	89
23	Active role of IT department in organization	3.0000	89
26	Appropriate metrics to measure success	3.0000	86

26	Electronic payment system	3.0000	86
28	Allowing FAQ on Web site	3.0000	84
29	Availability of new intermediaries for EC	3.0000	82
29	Online tracking facilities	3.0000	82
29	Online personalized recommendations	3.0000	82
32	Appropriate packaging	3.0000	81
33	Comprehensive e-commerce legislation	2.0000	86
33	Advertising online	2.0000	86
35	Web site listed on critical search engines	2.0000	79
36	Appropriate Sociotechnical policy	2.0000	76
36	Disintermediariation	2.0000	76

Table 3. Rank Orders for Success Factors of E-Business

From Table 3 it can be concluded that although the vast majority of companies have identified the majority of presented success factors, their values also differ for each category. The most identified success factors among large organisations include: effective project leader, secure transactions, adequate resources (finance &people), the use of new technology, rapid delivery, etc.

In order to establish the importance of each e-business benefit experienced by the participating companies, the achieved benefits were ranked according to the computed medians. Their rank order is presented in Table 4.

Rank	Benefits	Median	No of cases
1	Competitive advantage	4.0000	90
2	Improved image	4.0000	82
3	Increased sales	3.0000	91
4	Reduced operation costs	3.0000	90
5	Retained and expanded customer base	3.0000	89
5	Extended application of new technology	3.0000	89
7	Business efficiency	3.0000	87
8	Increased automation of processes	3.0000	85
9	Customer loyalty	3.0000	84
10	Secure electronic commerce environment	3.0000	83
10	Acquisition of a niche market	3.0000	83
12	Enhanced skills of employees	3.0000	80
13	Better knowledge management	3.0000	78
14	Reduced inventories	2.0000	85

Table 4. Rank Orders for Benefits of E-Business

From Table 4 it can be concluded that the vast majority of companies have achieved the majority of the anticipated benefits of e-business. However, the values differ for each category. The most achieved benefits of e-business accomplished in large organisations include: competitive advantage, improved image, increased sales, reduced operation costs, retained and expanded customer base, etc.

A number of senior managers in charge of electronic commerce in the seven organisations that participated in the semi-structured interviews were of the opinion that a relationship between success factors (solutions) and challenges (problems) existed. They were also of the opinion that success factors often influence the benefits achieved in e-business. These participants were convinced that some relationships did exist, particularly between some of the success factors such as partnership with suppliers, adequate resources and forming alliances on the one hand, and some of the challenges such as customer service, technology cost and software compatibility, on the other.

Similar relationships were also thought to exist between some of the success factors such as more personalised customer service, secure transactions, rapid delivery and regular update of the content of the web site on the one hand, and some of the benefits such as acquiring new markets, increased sales, retained and expanded customer base, business efficiency and customer loyalty, on the other.

To establish whether the above suggested and/or other relationships between the success factors challenges and benefits existed, a correlation analysis was conducted using the data acquired from the survey. The correlation analysis indicated that a number of variables were positively correlated as well as of statistical significance. With a large number of correlations, however, it was suspected that some of them were significant just by chance. This was the case with "payment via credit card" as a success factor and "reduced inventories" as a benefit of electronic commerce. These two variables were strongly correlated, but in reality it was not likely that they would be logically correlated. This particular correlation has therefore been omitted from the paper.

On the other hand, some of the variables such as "adequate resources" as a success factor and "technology cost" as a challenge of e-business were likely to be correlated. The results of correlation analysis also indicated that these two variables were correlated. This particular correlation was among those correlations whose existence was anticipated by the managers in charge of electronic commerce in the semi-structured interviews, as well.

In Tables 5 and 6 only statistically significant correlations between the variables whose relations were indicated to exist in the semi-structured interviews, as well as those that were likely to be logically correlated, have been included.

SUCCESS FACTORS	CHALLENGES	Sig.
Adequate resources	Technology Cost	.038
Active role of IT department	Integrating front-end EC to back-end system	.026
Cross functional project team	Security	.017
	Lack of EC knowledge	.018
	Dealing with intermediaries	.020
Effective project leader	Security	.010
	Web site issues	.018
	Software compatibility	.030
Forming alliances with new partners	Software compatibility	.043
Partnership with technology providers	Technology costs	.025
	Internet service provider reliability	.048
Partnership with service providers	Technology costs	.035
	Web site issues	.022
	Lack of EC infrastructure	.037
	Integrating front-end EC to back-end system	.010
	Customer service	.013
Partnership with suppliers	Web site issues	.019
	Customer service	.030
Secure transactions	Technology costs	.012
More personalised customer service	Dealing with intermediaries	.018
	Making business known to users	.016
Disintermediariation	Making business known to users	.028

Table 5. Correlations between Success Factors and Challenges

The level of significance (<.05), as an indicator of the strength of the correlation, indicates that all these correlations were statistically significant (column 3 in Table 5).

SUCCESS FACTORS	BENEFITS	Sig.
Active role of IT department	Retained and expanded customer base	.029
Forming alliances with new partners	Increased sales	.011
Partnership with technology providers	Competitive advantage	.015
Partnership with service providers	Retained and expanded customer base	.023
	Customers loyalty	.040
	Reduced inventories	.012
The use of new technology	Reduced inventories	.012
Secure transactions	Retained and expanded customer base	.036
	Increased sales	.022
Integrating web site to business processes	Reduced inventories	.014
Functional and user-friendly web site	Extended application of new technology	.014
	Better knowledge management	.018
Regular update of the web site	Customers loyalty	.021
Web site listed on critical search engines	Acquisition of a niche market	.010
	Increased sales	.032
	Customers loyalty	.017
	Competitive advantage	.030
	Better knowledge management	.025
Online catalogue	Increased automation of processes	.025
Online tracking facilities	Customers loyalty	.024
	Improved image	.012
	Better knowledge management	.023
Providing online decision support	Increased sales	.025
	Customers loyalty	.013
	Improved image	.031
Online personalized recommendations	Enhancing skills of employees	.011
	Improved image	.045
Allowing FAQ on Web site	Retained and expanded customer base	.026
	Acquisition of a niche market	.023
Payment via credit card	Customers loyalty	.026
Advertising online	Improved image	.027
Advertising in newsprint, magazines, radio	Competitive advantage	.032
Rapid delivery	Business efficiency	.013
Excelling in communication with customers	Retained and expanded customer base	.049

Table 6. Correlations between Success Factors and Benefits

The level of significance (<.05), as an indicator of the strength of the correlation, indicates that all these correlations were statistically significant, as well (column 3 in Table 6).

On the basis of the literature review, the semi-structured interviews (topic of another paper), and the survey analysis it was possible to assemble a Key CSF Set as instrument for overcoming the challenges and achieving the benefits of electronic business. The set was developed in a way that reflected the major findings from the semi-structured interviews with the seven organisations and the survey of the top 500 Australian companies, and can be used as a modus vivendi to overcome problems by applying appropriate solutions in order to achieve benefits in this area.

Only the challenges, success factors and benefits positioned in the top 50% of their respected rank order tables (2 to 4), which were significantly correlated with each other according to Tables 5 and 6, were included in the Key CSF Set.

The challenges, success factors and benefits of e-business that the participants in the semi-structured interviews suggested influenced each other, were included in the set if a statistically significant correlation between them existed, according to Tables 5 and 6. Figure 1 representing the Key CSF Set is presented below.

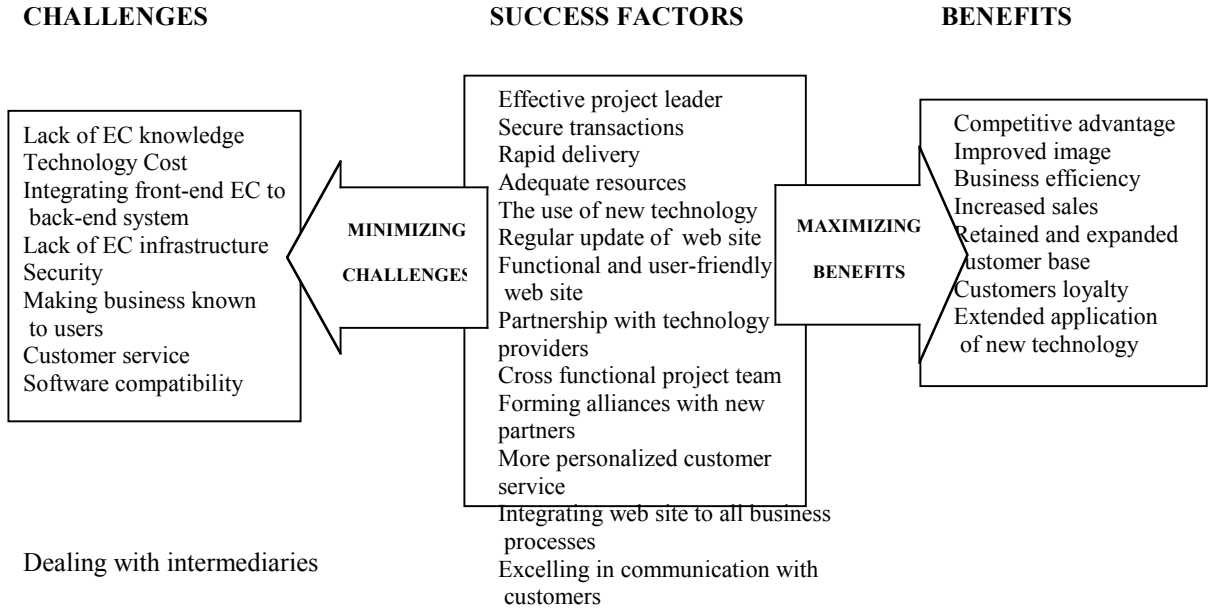

Figure 1. Model for Key Critical Success Factors

6. Conclusion

The research undertaken in this paper has identified challenges, critical success factors and benefits thought to be important among the leaders of electronic business in Australian organisations. Furthermore, a set of key factors developed in this article can be used as a modus vivendi to overcome problems by applying appropriate solutions in order to achieve benefits in this area. The key set can also be used as a tool for minimising the challenges and maximising benefits of e-business. Although this research addresses well-established business enterprises in Australia, the nature of electronic business is such that it is global and should be applicable to organisations over a much wider scope, as well as to small and medium size businesses/organizations

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