November 2008

Modus Vivendi of E-Business

Joze Kuzic  
*Monash University*, Joze.Kuzic@infotech.monash.edu.au

Julie Fisher  
*Monash University*, Julie.Fisher@infotech.monash.edu.au

Angela Scollary  
*Victoria University*, Angela.Scollary@vu.edu.au

Linda Dawson  
*Monash University*, Linda.Dawson@infotech.monash.edu.au

Milan Kuzic  
*Constraint Technology International Melbourne*, Milan.Kuzic@contecint.com.au

See next page for additional authors

Follow this and additional works at: [http://aisel.aisnet.org/pacis2006](http://aisel.aisnet.org/pacis2006)

Recommended Citation

Kuzic, Joze; Fisher, Julie; Scollary, Angela; Dawson, Linda; Kuzic, Milan; and Turner, Rod, "Modus Vivendi of E-Business" (2008).  
[http://aisel.aisnet.org/pacis2006/77](http://aisel.aisnet.org/pacis2006/77)

This material is brought to you by the Pacific Asia Conference on Information Systems (PACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in PACIS 2006 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.
Authors
Joze Kuzic, Julie Fisher, Angela Scollary, Linda Dawson, Milan Kuzic, and Rod Turner

This article is available at AIS Electronic Library (AISeL): http://aisel.aisnet.org/pacis2006/77
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 organizations to achieve benefits from e-business, it is imperative for companies to recognize 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 recognize 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 organizations. 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 minimizing the challenges and maximizing 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.

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Literature Citation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Obtaining senior management</td>
<td>Sharma, 2001; de la Torre and Moxon, 2001; Chan et al., 2003;</td>
</tr>
</tbody>
</table>


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.


Success Factors


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.


Electronic payment system: Peffers and Ma, 2003; Schneider, 2004.

Benefits


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.


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

<table>
<thead>
<tr>
<th>Rank</th>
<th>CHALLENGES</th>
<th>Median</th>
<th>No of cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Lack of e-commerce knowledge</td>
<td>3.0000</td>
<td>96</td>
</tr>
<tr>
<td>2</td>
<td>Technology cost</td>
<td>3.0000</td>
<td>95</td>
</tr>
</tbody>
</table>
Table 2. Rank Orders for Challenges of E-Business

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

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.
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.

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.

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

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](image)

**CHALLENGES**
- Lack of EC knowledge
- Technology Cost
- Integrating front-end EC to back-end system
- Lack of EC infrastructure
- Security
- Making business known to users
- Customer service
- Software compatibility

**SUCCESS FACTORS**
- Effective project leader
- Secure transactions
- Rapid delivery
- Adequate resources
- The use of new technology
- Regular update of web site
- Functional and user-friendly web site
- Partnership with technology providers
- Cross functional project team
- Forming alliances with new partners
- More personalized customer service

**MINIMIZING CHALLENGES**
- Integrating web site to all business processes
- Excelling in communication with customers

**MAXIMIZING BENEFITS**
- Competitive advantage
- Improved image
- Business efficiency
- Increased sales
- Retained and expanded customer base
- Customers loyalty
- Extended application of new technology

**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.

**References**


Peffers, K. and Ma, W. “An agenda for research about the value of payment systems for transactions in electronic commerce. JITTA”, *Journal of Information Technology Theory and Application. Hong Kong*, (4:4), 2003, p.. 1


Schneider, G. Electronic Commerce the second wave, Tomson Learning, Course Technology, Canada.


Totty, M. E-Commerce (A Special Report): The Rules---Regulations: Taming the Frontier---The Internet was going to be a place without rules, without borders; A place where anything goes well, guess what?, *Wall Street Journal*, 2003,p. R.10

