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Actual realisation of business-to-business electronic commerce benefits from IT investments has been a critical issue for large organisations. However, relatively little research has been undertaken to determine the drivers for realising B2B e-commerce benefits within these organisations.
Hence, the main objective of this paper is to examine the relationships between organisational IT maturity, IEM, BRP, B2B e-commerce adoption readiness, and B2B e-commerce benefits in large Australian organisations.
Significance of the Research

- IS/IT investment now represents substantial financial investment
- There’s still a lack of understanding of the impact of IS/IT investment evaluation process
- It is often the subject of heated debates among the researchers
Significance of the Research

- A growing need to evaluate & improve IS/IT investment
- A critical but difficult management issue
- Very little published work has been conducted in Australia to look at IS/IT investment evaluation and benefits realization processes
The traditional financially oriented techniques such as ROI & NPV can be problematic in measuring IS/IT investments:

- Return on Management (ROM) (Strassman, 1990)
- Information Economics (IE) (Parker et al., 1988)
- SESAME by IBM (Willcocks et al., 1992)
- Kobler Unit Framework (Hochstrasser, 1994)
- Matching Objectives, Projects and Techniques (Butler Cox Foundation, 1990)
IS/IT Benefits Realisation Processes

Benefits may be considered as the effect of the changes, i.e. management of changes – the difference between the current & proposed way that work is done

- The Cranfield Process Model of Benefits Management (Ward & Griffiths, 1996)
- DMR’s Benefits Realisation Model (Truax, 1997)
- Active Benefits Realisation (ABR) (Remenyi et al., 1997)
# IT Evaluation Studies

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Taiwanese Firms</td>
<td>Large Australian Firms</td>
<td>Australian SMEs</td>
<td>Large Australian Firms</td>
<td>Large UK Firms</td>
<td>UK Firms</td>
</tr>
<tr>
<td>Usage of:</td>
<td>52.8%</td>
<td>67.6%</td>
<td>67.7%</td>
<td>65.7%</td>
<td>60%</td>
<td>&gt;50%</td>
</tr>
<tr>
<td>- IT investment evaluation methodology (IEM)</td>
<td>52.8%</td>
<td>41.5%</td>
<td>-</td>
<td>32.8%</td>
<td>12%</td>
<td>-</td>
</tr>
<tr>
<td>- IT benefits realization methodology (BRM)</td>
<td>31.2%</td>
<td>46.1%</td>
<td>-</td>
<td>41.9%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Effective use of:</td>
<td>31.2%</td>
<td>46.1%</td>
<td>-</td>
<td>41.9%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>- IEM</td>
<td>29.2%</td>
<td>32.4%</td>
<td>-</td>
<td>38.1%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>- BRM</td>
<td>29.2%</td>
<td>32.4%</td>
<td>-</td>
<td>38.1%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Current process was able to identify relevant benefits</td>
<td>46.2%</td>
<td>38.7%</td>
<td>-</td>
<td>50.0%</td>
<td>78.0%</td>
<td>-</td>
</tr>
<tr>
<td>Overstated the benefits in order to get approval</td>
<td>47.7%</td>
<td>30.9%</td>
<td>-</td>
<td>26.2%</td>
<td>47%</td>
<td>-</td>
</tr>
<tr>
<td>Prepared a benefits delivery plan</td>
<td>60.4%</td>
<td>29.6%</td>
<td>45%</td>
<td>43.0%</td>
<td>27%</td>
<td>-</td>
</tr>
<tr>
<td>Had a formal process to ensure that lessons were learned</td>
<td>65.1%</td>
<td>42.0%</td>
<td>20.8%</td>
<td>52.3%</td>
<td>29%</td>
<td>44.0%</td>
</tr>
<tr>
<td>Had a formal process to identify and realize any further benefits after implementation</td>
<td>61.3%</td>
<td>28.7%</td>
<td>-</td>
<td>18.2%</td>
<td>19%</td>
<td>-</td>
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</tbody>
</table>
Organizational IT Maturity

- Organisational IT maturity refers to an organisation’s capability to utilise its existing IT infrastructure to obtain business value.
- It is about the organisation’s ability to effectively deploy IT infrastructure (e.g. organisational strategy and skills) towards the achievement of benefits such as competitive advantage in line with business goals.
B2B e-commerce Adoption Readiness

- It relates to the degree of fit between the adoption of B2B e-commerce and the values, beliefs, and business needs of organisations as well as goals, interests, and expectations of stakeholders.
- It is the aptitude of an organisation to adopt B2B e-commerce in accordance with its organisational values and in the interests of its stakeholders.
Theoretical Background

Economic View of IT Investment Management Process
Theoretical Background

Organisational View of IT Investment Management Process

- Organisational IT Maturity
- B2B e-Commerce Adoption Readiness
- B2B e-Commerce Benefits
A Research Model of IT Investment Management
Research Hypotheses

Hypothesis 1: Organisational IT maturity is positively related to B2B e-commerce adoption readiness.

Hypothesis 2: Organisational IT maturity is positively related to IEM adoption.

Hypothesis 3: Organisational IT maturity is positively related to BRP adoption.
Research Hypotheses

Hypothesis 4: IEM adoption is positively related to B2B e-commerce benefits.

Hypothesis 5: BRP adoption is positively related to B2B e-commerce benefits.

Hypothesis 6: IEM adoption is positively related to BRP adoption.
Research Hypotheses

Hypothesis 7: IEM adoption is positively related to B2B e-commerce adoption readiness.

Hypothesis 8: B2B e-commerce adoption readiness is positively related to B2B e-commerce benefits.
The survey was conducted in 2005
- Pilot study was conducted
- IS/IT managers of the 900 large Australian organizations were targeted
- 181 responses (response rate is 20.1%)
### Table 1 Correlation matrix for constructs

<table>
<thead>
<tr>
<th>Construct</th>
<th>Mean</th>
<th>SD</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>Alpha&lt;sup&gt;a&lt;/sup&gt;</th>
<th>CR&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>C1 Organisational IT maturity</td>
<td>4.15</td>
<td>1.09</td>
<td>0.57&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.84</td>
<td>0.84</td>
</tr>
<tr>
<td>C2 B2B e-commerce adoption readiness</td>
<td>4.31</td>
<td>0.86</td>
<td>0.376&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.49&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
<td></td>
<td>0.83</td>
<td>0.83</td>
</tr>
<tr>
<td>C3 IEM</td>
<td>4.41</td>
<td>1.05</td>
<td>0.333&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.264&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.66&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td></td>
<td>0.87</td>
<td>0.88</td>
</tr>
<tr>
<td>C4 BRP</td>
<td>3.77</td>
<td>0.98</td>
<td>0.468&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.212&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.476&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.64&lt;sup&gt;c&lt;/sup&gt;</td>
<td></td>
<td>0.83</td>
<td>0.84</td>
</tr>
<tr>
<td>C5 B2B e-commerce benefits</td>
<td>4.08</td>
<td>0.88</td>
<td>0.347&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.489&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.272&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.321&lt;sup&gt;***&lt;/sup&gt;</td>
<td>0.60&lt;sup&gt;c&lt;/sup&gt;</td>
<td>0.80</td>
<td>0.81</td>
</tr>
</tbody>
</table>

**P<0.01; ***P<0.001.**

<sup>a</sup>Internal consistency reliability Cronbach’s coefficient alpha.

<sup>b</sup>Composite reliability (Fornell & Larcker, 1981).

<sup>c</sup>The diagonal (in italics) shows the average variance extracted (Fornell & Larcker, 1981) for each construct.
# Data Analysis

## Table 3  Results of structural equation modelling (SEM)

| Independent constructs |  |  |  |  |  |  |  |
|------------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                        | IEM              | BRP              | B2B e-commerce readiness | B2B e-commerce benefits |
|                        | Beta (SE) | t-value | Beta (SE) | t-value | Beta (SE) | t-value | Beta (SE) | t-value |
| IT maturity           | 0.343 (0.086) | 3.98*** | 0.413 (0.087) | 4.73*** | 0.397 (0.100) | 4.02*** | 0.009 (0.082) | 0.11 |
| IEM                   | 0.367 (0.082) | 4.46*** | 0.177 (0.090) | 1.97*  |
| BRP                   |                 |                 |                 |        |
| B2B e-commerce readiness |         |       |                 |        |
| B2B e-commerce readiness |         |       |                 |        |

| R²                     | 0.12 | 0.41 | 0.24 | 0.50 |
| Model fit              | \( \chi^2 = 105.83 \) | df = 96 | \( P = 0.231 \) | RMSEA = 0.024 |
| GFI                    | 0.932 | AGFI = 0.903 | NFI = 0.922 | CFI = 0.988 |

All beta coefficients are unstandardised.
*\( P < 0.05 \); **\( P < 0.01 \); ***\( P < 0.001 \).
Some Survey Results

H1 0.397*** → B2B e-Commerce Adoption Readiness

H2 0.343** → IT Investment Evaluation Methodologies (IEM)

H3 0.413*** → IT Benefits Realisation Processes (BRP)

H4 0.001

H5 0.194** → B2B e-Commerce Benefits

H6 0.367***

H7 0.177*

H8 0.616***

Organisational IT Maturity

Note: All coefficients are unstandardised.
All solid line path coefficients are significant at p < 0.05. (The dotted line coefficient is non-significant.)
*p < .05; **p < .01; ***p < .001
Some Survey Results-2

- All hypotheses were supported except H4.

- While IEM has a positive impact on BRP and B2B e-commerce adoption readiness it has no direct influence on the realisation of B2B e-commerce benefits. It has to be used in conjunction with BRP and/or with an appropriate level of B2B e-commerce adoption readiness to have any significant impact on B2B e-commerce benefits.
Some Survey Results-3

- Both B2B e-commerce adoption readiness and the use of BRP have mediating effects on the relationship between IEM and B2B e-commerce benefits.

- Early adoption of IEM can assist an organisation in increasing its level of B2B e-commerce adoption readiness and/or in preparing the subsequent adoption of BRP in the process of realising benefits in B2B e-commerce.
The effects of B2B e-commerce adoption readiness and organisational IT maturity differ in terms of the generation of B2B e-commerce benefits. B2B e-commerce adoption readiness has a strong positive impact on B2B e-commerce benefits whereas organisational IT maturity only affects B2B e-commerce benefits indirectly through B2B e-commerce adoption readiness or the adoption of BRP.

This indicates that the level of organisational IT maturity is an antecedent driver of IEM, BRP, and B2B e-commerce adoption readiness in terms of realising B2B e-commerce benefits.
Theoretical Contribution

- A key finding of our study is the positive relationship between IT evaluation practices (i.e. IEM and BRP) and B2B e-commerce benefits.

- Another key contribution is associated with the development of an integrated IT Investment Management Model.

- We define for the first time the significant role played by organisational IT maturity as an antecedent driver of IEM, BRP, and B2B e-commerce adoption readiness and their roles in realising B2B e-commerce benefits.
Managerial Contribution

- This research provides some insights for understanding why some large organisations fail to realise benefits from their B2B e-commerce investments.
- Senior IT executives should carefully assess their B2B e-commerce investments and ensure that the required level of organisational IT maturity, the level of B2B e-commerce adoption readiness, and the level of IEM and BRP adoption are appropriate in the process of realising B2B e-commerce benefits.
- Senior IT executives in large organisations should focus on making IT an integral part of their business strategy.
The End

Thank you!