Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.
FACTORS AFFECTING THE EXTENT OF
E-PROCUREMENT USE IN SMALL AND MEDIUM
ENTERPRISES IN NEW ZEALAND

A thesis presented in partial fulfilment of the requirements
for the degree of

Doctor of Philosophy

in

Business Information Systems

At

Massey University

Manawatu Campus

New Zealand

Haslinda Hassan

2013
ABSTRACT

Organisations practicing e-procurement rely on a range of information technologies to facilitate contracting and purchasing. Even though e-procurement is widely in use, factors shaping the use of e-procurement are poorly understood, because the existing studies relied on limited models of e-procurement practice. In particular, none of the studies took into account both the range of e-procurement functionalities used (breadth of e-procurement use) and the extent to which an organisation relies on e-procurement (depth of e-procurement use). Therefore, the purpose of my study was (a) to extend the existing measures of the extent of e-procurement use to better account for the richness of the existing practice, and (b) to examine the main factors affecting the extent of e-procurement use.

An explanatory model of the extent of e-procurement use was formulated by conceptualising the extent of use as a two-dimensional construct comprising the dimensions of breadth and depth. The factors hypothesised to affect the breadth and the depth of e-procurement use were derived based on technology-organisation-environment (TOE) framework and diffusion of innovation (DOI) theory as well as on prior empirical studies of e-procurement adoption and use within an organisation. The factors from the technological context were relative advantage, compatibility, and complexity; from the organisational context, top management support and employee knowledge; and from the environmental context, partner readiness and external pressure.

The model was tested against quantitative data obtained in a survey of 1,000 small and medium enterprises (SMEs) in the manufacturing industry in New Zealand. The response rate was 15%. Structural equation modelling was used to test the model. Qualitative data obtained in a series of follow-up interviews and in the survey were analysed via constant comparative method. Qualitative results were used to help interpret the quantitative findings.
The model explained 39% of variance in the breadth of e-procurement use and 32% of variance in the depth of e-procurement use. Of the technological factors, relative advantage affected the breadth of e-procurement use ($\beta = .26$) and compatibility affected the depth of e-procurement use ($\beta = .33$). An environmental factor, external pressure, affected the breadth of e-procurement use ($\beta = .37$). None of the factors from the organisational context of TOE framework had effect.

Findings suggest that the breadth and the depth of e-procurement use are affected by different factors and, thus, lend support to conceptualising the extent of e-procurement use as a two-dimensional construct. However, the support for using DOI theory in context of explaining e-procurement use was mixed; of the three factors derived from DOI theory, relative advantage, compatibility, and complexity, only relative advantage and compatibility had effect.

Keywords: E-Procurement, TOE Framework, DOI Theory, SMEs, New Zealand.
DEDICATION

I dedicate this thesis to my late father, Hassan Saad, 1932–2010, who gave me his continuous support until his last breath but had no opportunity to see me complete this study.

I dedicate this thesis to my mother, Mariam Ismail, for her support, prayers, patience, and encouragement.

This journey would not have been possible without you both.
ACKNOWLEDGEMENTS

First and foremost, I thank God for giving me the strength, health, and wisdom to complete this dissertation. You make all things possible.

I thank my supervisors, Dr. Alexei Tretiakov and Dr. Dick Whiddett, for giving me feedback throughout my PhD study.

A special thanks to all the survey respondents, who gave their valuable time to complete the survey and to participate in the interviews.

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I thank Jeremy Zwiegelaar for checking the approaches I used for statistical analyses.
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<tr>
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<tr>
<td>AVE</td>
<td>Average variance extracted</td>
</tr>
<tr>
<td>B2B</td>
<td>Business-to-business</td>
</tr>
<tr>
<td>CFA</td>
<td>Confirmatory factor analysis</td>
</tr>
<tr>
<td>CFI</td>
<td>Comparative fit index</td>
</tr>
<tr>
<td>DOI</td>
<td>Diffusion of innovation</td>
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<tr>
<td>EDI</td>
<td>Electronic data interchange</td>
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<tr>
<td>EFA</td>
<td>Exploratory factor analysis</td>
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<tr>
<td>ERP</td>
<td>Enterprise resource planning</td>
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<tr>
<td>ICT</td>
<td>Information and communication technology</td>
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<tr>
<td>InterOS</td>
<td>Inter-organisational information systems</td>
</tr>
<tr>
<td>IntraOS</td>
<td>Intra-organisational information systems</td>
</tr>
<tr>
<td>MIS</td>
<td>Management information systems</td>
</tr>
<tr>
<td>MRO</td>
<td>Maintenance, repair, and operating</td>
</tr>
<tr>
<td>NAPM</td>
<td>National Association of Purchasing Management</td>
</tr>
<tr>
<td>PLS</td>
<td>Partial least squares</td>
</tr>
<tr>
<td>RBV</td>
<td>Resource-based view</td>
</tr>
<tr>
<td>RMSEA</td>
<td>Root mean square error of approximation</td>
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<tr>
<td>SEM</td>
<td>Structural equation modelling</td>
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<tr>
<td>SME</td>
<td>Small and medium enterprise</td>
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<td>SRMR</td>
<td>Standardised root mean square residual</td>
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<td>Tucker-Lewis index</td>
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<tr>
<td>TOE</td>
<td>Technology-organisation-environment</td>
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<td>WWW</td>
<td>World Wide Web</td>
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LIST OF PUBLICATIONS

Conference abstracts and conference proceedings papers published in conjunction with my study.

Conference Abstracts


Conference Proceedings Papers
