Factors Contributing to Visible Performance in Saudi Technology Incubators

A THESIS SUBMITTED IN FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF

DOCTOR OF PHILOSOPHY

by

Muhammad Hatim Binsawad

Faculty of Engineering and Information Technology
University of Technology Sydney

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Certificate of Original Authorship

I, Muhammad Hatim Binsawad declare that this thesis, is submitted in fulfilment of the requirements for the award of Doctor of Philosophy PhD, in the School of Information Systems and Modeling/Faculty of Engineering and Information Technology at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise reference or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis. This document has not been submitted for qualifications at any other academic institution.

This research is supported by the Australian Government Research Training Program.

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Date: 25 / 06 / 2019
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Thank you,
Muhammad Binsawad
List of Publications

The following research articles were produced to publish some impressions and outcomes from the work undertaken by the author during the course of this PhD research study

**Referred Journal and Conference Papers**


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9. Hawryszkiewycz, I. and Binsawad, M. 2016, October, 'Classifying knowledge-sharing barriers by organizational structure in order to find ways to remove these barriers'. In Eighth International Conference on Knowledge and Systems Engineering (KSE). IEEE, Hanoi, Vietnam, pp. 73-8. Ranked “B” conference

Abstract

In today’s competitive global market, technology business incubators are considered the backbone of a region’s economic development, involved in the creation of employment opportunities, boosting the local economy and commercializing, particularly as regard innovative technologies. In Saudi Arabia, incubators are working to develop innovative businesses with the potential to contribute to the nation’s technological growth. The goal of Saudi incubators is to focus on technology innovations. These incubators contribute to knowledge-based programs that produce opportunities that will help transform the country into a knowledge-based society and, in turn, contribute to a knowledge-based economy. With the development of a knowledge-based economy, incubators are considered viable business entities to generate products arise from a veritable mix of innovation, knowledge and its management within the incubators. For the success and performance to ensure survival of an incubator, the transfer of tacit knowledge is very important. Universities play a key role in transferring tacit knowledge into explicit form. In the context of university-based technology incubators, the university facilitates knowledge flows to the incubator through academics and processes. Thus, incubators play a vital role as a catalyst for economic development by ongoing knowledge transfer.

This research explores the major factors influencing Saudi technology incubators’ performance. It examines factors that include knowledge sharing, individual creativity and innovation diffusion. Based on existing theories and extensive related studies, the conceptual model of this study was conducted. This study adopts a mixed method approach (quantitative and qualitative) through two stages.
First, the quantitative approach was conducted to empirically investigate the factors’ relationships in the proposed model through applying survey instrument. Second, the qualitative approach was applied in order to validate the quantitative results and present more insights into the identified factors’ relations with the conceptual model.

The study shows that phase one (quantitative) of the research supports all the identified relations of the hypotheses of knowledge sharing organizational and individual factors, knowledge-sharing process (donation and collection), individual creativity and diffusion of innovation except H1b, H3a, H4a, H9 and H10 hypotheses that clarified as following:-

H1b- Management support positively impacts knowledge sharing collection
H3a- Rewards positively impacts knowledge sharing donation.
H4a- Interpersonal trust positively impacts knowledge sharing donation.
H9- Expertise positively impacts technology incubator performance.
H10- Creative thinking skills positively impact technology incubator performance.

The second phase (qualitative) of the research generated mixed findings. Most of qualitative phase findings endorse the quantitative results. On the other hand, some of these findings do not endorse the quantitative results, however they support the proposed hypotheses in the actual research. Finally, the study concludes and presents the current research and practices.
## Glossary

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
<th>Definition</th>
</tr>
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<tbody>
<tr>
<td>KSP</td>
<td>Knowledge-sharing process</td>
<td>The procedures of transferring (sending and receiving) knowledge (experience, skills etc.)</td>
</tr>
<tr>
<td>DON</td>
<td>Donation</td>
<td>Knowledge is shared by an individual ‘donating’ their own personal intellectual capital to others.</td>
</tr>
<tr>
<td>COL</td>
<td>Collection</td>
<td>An individual furthers their knowledge by requesting colleagues to share their intellectual capital.</td>
</tr>
<tr>
<td>MS</td>
<td>Management Support</td>
<td>This represents the extent to which senior management support knowledge sharing within the organization through facilitating the required resources and encouraging employees to share their knowledge with others.</td>
</tr>
<tr>
<td>ITS</td>
<td>Information Technology Support</td>
<td>Level to which facilitating knowledge sharing through information technology use.</td>
</tr>
<tr>
<td>RWD</td>
<td>Rewards</td>
<td>The degree to which a reward system to share any new and creative ideas and effectiveness knowledge sharing.</td>
</tr>
<tr>
<td>ITrsut</td>
<td>Interpersonal Trust</td>
<td>Co-workers having a good level of faith in each other in terms of intentions and behaviors.</td>
</tr>
<tr>
<td>ENS</td>
<td>Enjoyment in Sharing</td>
<td>Pleasure and joy in exchange of information among people.</td>
</tr>
<tr>
<td>SE</td>
<td>Self-Efficacy</td>
<td>The belief individuals hold in themselves regarding their competencies to organize and execute the course of action required necessary to achieve a particular level of performance.</td>
</tr>
<tr>
<td>DOI</td>
<td>Diffusion of Innovation</td>
<td>A theory explaining the way that new ideas or technology innovations spread.</td>
</tr>
<tr>
<td>ComX</td>
<td>Complexity</td>
<td>The degree to which an innovation is perceived as relatively difficult to understand and to use, that could be involved in the ability of users, technical skills conditions and technological requirements, etc.</td>
</tr>
<tr>
<td>Com</td>
<td>Compatibility</td>
<td>The extent to which innovation is considered as stable with current values.</td>
</tr>
<tr>
<td>RA</td>
<td>Relative Advantage</td>
<td>The potential advantage that could be achieved by users, if the innovation was applied</td>
</tr>
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<td>-----</td>
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<td>--------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>IM</td>
<td>Intrinsic Motivation</td>
<td>The passion and desire of someone to work on a specific task that is interesting, challenging and exciting for him.</td>
</tr>
<tr>
<td>Exp</td>
<td>Expertise</td>
<td>Expertise can be considered as skills of performing a specific task in the most effective and creative manner.</td>
</tr>
<tr>
<td>CTS</td>
<td>Creative Thinking Skills</td>
<td>The abilities or capabilities for innovative, cognitive and creative thoughts.</td>
</tr>
<tr>
<td>TIP</td>
<td>Technology Incubator Performance</td>
<td>The outcome of the incubators such as program growth and sustainability, tenant firm's survival and growth, contributions to sponsoring the university's mission and community-related impacts</td>
</tr>
<tr>
<td>TI</td>
<td>Technology Incubator</td>
<td>“The technology incubator is an entity where knowledge is transformed into innovative products and services”</td>
</tr>
<tr>
<td>EFA</td>
<td>Exploratory Factor Analysis</td>
<td>Factor analysis technique providing an appropriate number for each factor of the constructs of the proposed model.</td>
</tr>
<tr>
<td>CFA</td>
<td>Confirmatory Factor Analysis</td>
<td>Factor analysis type confirming identified structures of the factor as well as further strengthening the validation of every construct and its factors in social research.</td>
</tr>
<tr>
<td>KPI</td>
<td>Key Performance Indicator</td>
<td>A measurable entity that investigates how an organization achieves its business objectives in an efficient way.</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and Development</td>
<td>Business activities investigated by an organization in order to develop innovations or procedures.</td>
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