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**ABSTRACT**

This exploratory research focuses on the innovation and globalization behaviour of small to medium enterprises (SMEs). The research examines the relationships among five firm level constructs: the extent to which firms engage in collaboration; sources of ideas within and outside the firm; the degree to which they undertake innovation; the extent to which they engage in globalization activities; and firm performance.

We know from previous research that innovation and globalization are associated with the growth of economies. Innovation and globalization activities facilitate competition amongst firms and help to improve firm productivity. This research extends previous research and identifies innovation and globalization activities that are associated with better performing firms.

But what drives innovation and globalization in firms? The research suggests that the type of strategies that firms develop, in conjunction with the collaboration activities they engage in, are associated with firm innovation and globalization. Specifically, those firms that develop appropriate business strategies are more likely to innovate and those that have a greater propensity to collaborate are more likely to be globalised. Contrary to expectations, SME globalization activities are not related to firm performance.

This research makes contributions at two levels. At the scholarly level, it contributes toward theory development. At a practical level, the research has implications for entrepreneurs and policy makers. These implications suggest that entrepreneurs need to be educated about the importance of developing appropriate business strategies and firm collaboration since these underpin innovation and globalization which, in turn, influence performance. Better performing firms result in more buoyant local, State, and national economies. As such, there is a need to develop and deliver appropriate
training and consultancy programs to business owners and managers that take into consideration the results of this research.

Key Words: Innovation, globalization, firm, performance, SME, collaboration, ideas, drivers.

INTRODUCTION

Innovation and globalization have been associated with high-performing firms (Geroski and Machin, 1992, Darroch, 2005, Freel, 2000, Zahra and Garvis, 2000). Innovation involves developing something new that creates value for the consumer (Sundbo, 1998). Globalization is associated with engaging in global markets through export or import. These activities appear relevant for dealing with complex business environments (Lee and Peterson, 2000). Innovation, for example, can be used to gain a competitive advantage in dynamic and competitive markets (OECD, 2005b). In doing so, innovation helps firms to grow (Freel and Robson, 2004, Audretsch, 1995).

Expanding the size of a firm’s target market can also contribute to firm growth (1965, p. 101). Firms that reach out to global markets have a greater growth propensity (Zahra et al., 2000). Thus, interaction with global markets can stimulate firm growth and improve firm performance (Zahra et al., 2000). Globalised firms also tend to be more innovative in adjusting their organisational structures and communication channels to deal with foreign competitors and to deal with market dynamism and turbulence (Narula and Zanfei, 2005).

However, there are downsides to globalization and innovation. Globalization, for example, increases risk (Levitt, 1984). Furthermore, globalization and innovation require the allocation of increased resources in order to gain future benefits (Fahy, 2000, 2002). Thus, there is a trade-off between today’s consumption and future growth prospects. This trade-off leads firms to apply particular strategies to reach their goals.

There has been considerable research into innovation and globalization (see, for example, Becheikh et al., 2006, Dhungana, 2003, George et al., 2005, Narula and Zanfei, 2005). That research, however, has tended to examine innovation and globalization individually. This current study builds upon prior research but adopts an holistic approach to examine the inter-relationships between innovation, globalization, and firm performance. Examining such inter-relationships better contributes toward our understanding of firm performance.

UNDERLYING THEORIES


RBV theory provides a relevant context for the underlying strategic selection of resources. The way that firms collaborate among each other contributes toward the efficient distribution of resources in order to apply innovation and/or globalization activities so as to gain a competitive advantage. Thus, RBV theory is useful for understanding how firms gain and sustain a competitive advantage through their strategic choice of scarce resources.

SMEs, for example, are constrained by limited resources (Damanpour, 1992, Stock et al., 2002). Their lack of resources requires them to use these resources wisely and, where possible, to leverage off these to obtain other resources by means of their skills and capabilities (Soutaris, 2002, Freel, 2003, Guangzhou, 2003). Through the acquisition and development of appropriate strategic resources, SMEs are better positioned to take advantage of business opportunities and to gain a competitive advantage.

NIS provides a relevant context for the underlying interconnections and relationships that benefit or limit innovation activities. NIS theory concentrates on the interaction between economy factors and on the institutional frameworks that facilitate or hinder the flow of knowledge and information useful for innovative activities (Lundvall, 1992, Nelson, 1993, Metcalfe, 1995, Edquist, 1997, OECD, 1997). NIS is useful for understanding firm abilities to strategically locate which can influence collaboration and innovation activities.
CONCEPTUAL MODEL

Figure 1 provides an overview of the conceptual model. This hypothesizes that internal firm drivers influence innovation and globalization and that sources of ideas/collaboration activities influence innovation, globalization, and internal firm drivers. In turn, globalization influences innovation and innovation and globalization influence firm performance. Model components are described below.

Drivers

Firms engage in innovation and/or globalization activities for different reasons. Underpinning these activities are a range of strategies including those associated with market development, those associated with the various regulatory and legal issues that a firm needs to deal with, and those ultimately designed to increase profits.

Internal drivers that affect the behavior of firms in connection with innovation activities can be divided into three groups (Galende and de la Fuente, 2003). These are tangible drivers such as: size of firms and debt, intangible drivers including human, commercial and organizational resources, and strategies which include diversification and internalization. These drivers are resources that have the potential to contribute toward economic benefit (Galbreath; 2005) and can affect firm innovation activity behaviour (Galende and de la Fuente, 2003).

Collaboration Activities and Idea Sources

Collaboration and/or strategic alliances intensify the flow of technology and knowledge among firms (Freeman, 1987; Lundvall, 1992; Nelson, 1993; Patel and Pavitt, 1999; Leydesdorff and Etzkowitz, 1998b; Saad, 2004; Cooke, 2005). They are important sources of resources, learning, and competitive advantage (Ireland et al., 2002, p. 413) and thus help firms improve their positions as a result of sharing resources (Hitt et al., 2000). Collaboration can involve cooperating with clients, suppliers, and competitors. It can also occur within the firm whereby different functional areas interact with each other.

Ideas designed to improve firm performance come from a variety of sources. These include ideas generated from market related sources (e.g., ideas from customers, suppliers, consultants, and competitors) as well as ideas from conferences, exhibitions, websites, and publications.

Innovation Activities

There are many definitions of innovation. The Oslo Manual (OECD, 2005b, p. 46) identifies innovation as the “...implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practice, workplace organization or external relation”. Simplistically, innovation is something new that creates value in the eyes of the consumer (Sundbo, 1998).

Innovation includes developing new and/or enhancing existing products. It also can be linked to operational processes associated with production or product/services delivery and the hardware and software related to those processes, how a business is managed (e.g., the type of management practices embraced in the workplace), as well as the marketing methods employed in a firm (e.g., those associated with product design, packaging, promotion, and/or pricing).

Globalization Activities

Globalization is a process that generates new interconnections and integration among economies. It is the intensification of connections between capital, labor, and nation states. These, in turn, are underpinned by four related elements: production; trade; investment; and finance (Ohmae, 1993).
Technological advances can be used in globalization to produce change, reduce transaction costs, and facilitate globalization; for example, transport, communication, and travel have changed isolated places and the ways of doing business across borders (Ohmae, 1993). Key globalization features include continuous reduction of barriers in trade, more integrated financial markets, and foreign direct investment. These facilitate the development of international and multinational firms via technology transfer and knowledge (OECD, 2005a).

**Firm Performance**

Performance can be thought of as a means of quantifying action (Neely et al., 2005, p. 1228). Firm performance can be measured in various ways including sales growth, market share, profitability, overall performance, and stakeholder satisfaction (Lumpkin and Dess, 1996).

**Hypotheses**

There are eight hypothesis addressed in this research. These are as follows:

- **H1**: Higher levels of globalization activities will result in higher levels of innovation activities.
- **H2**: Higher levels of innovation activities will result in better firm performance.
- **H3**: Higher levels of globalization activities will result in better firm performance.
- **H4**: Higher levels of internal drivers (profit, marketing and/or legal) will result in higher levels of innovation activities.
- **H5**: Higher levels of internal drivers (profit, marketing and legal) will result in higher levels of globalization activities.
- **H6**: Higher levels of collaboration activities will result in higher levels of innovation activities.
- **H7**: Higher levels of collaboration activities will result in higher levels of globalization activities.
- **H8**: Higher levels of collaboration activities will result in higher levels of internal drivers.

**RESEARCH METHOD**

This research used an internet survey. A website was designed for this purpose. Firms were randomly selected from the Australian Business Register (ABR) database. However, the randomly selected sample was “refined” to:

- Exclude non-trading private sector firms, businesses where there were the same owners, government entities, and firms in agriculture, forestry and fishing, public administration and safety, education and training, health care and social assistance, and/or other services (based on their ANZIC codes), and
- Include only those firms that had a registered email address, that were in the greater Adelaide (Australia) city metropolitan area, and that were registered for GST (Goods and Services Tax).

The survey was undertaken in 2007. An email invitation (and reminders) with a password for completing the survey on the internet were sent to the email addresses registered on the ABR. Around 14,000 invitations to respond to the questionnaire were sent by email. Approximately 30% of the invitations did not reach their target because the email addresses were out of date. We received a total of 1,226 responses. These were subdivided into two demographic groups based on firm age and size based on number of employees. For the purpose of this paper, we use only one group that included 204 SMEs with more than four employees and less than 200 employees.
Measures

**Internal Drivers:** Internal driver measures focus on profit, marketing, and legal strategies adopted by firms.

**Collaboration and Sources of Ideas:** Measures of collaboration activities focused on those activities within the enterprise group as well as those outside activities engaging with clients, suppliers, and competitors. Marketing sources of ideas included websites, conferences, journals, and professional meetings.

**Innovation:** Innovation was measured in terms of four types of activities: product, organisational or managerial methods, operational processes and marketing methods.

**Globalization:** Globalization measures focused on to what extent a firm purchased technology from overseas, whether it accessed inputs for production from overseas, whether it obtained products for sale from overseas, and/or whether it exported products or services.

**Firm Performance:** Performance was measured in terms of a firm’s ability to gain market share and its ability to grow its sales.

**RESULTS**

There were four aspects to the data analysis. First, a descriptive analysis was undertaken to better understand the demographics of the sample. Table 1 provides details on the sample demographics. These are divided into entity types, duration of business operation, ANZSIC sectors, innovation activities and globalization activities.

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**Insert Table 1 about here**

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Second, we use structural equation modelling (SEM) using AMOS to analyse the relationships between variables. The model was developed in various stages. This included developing one factor model solutions, then higher factor models, and finally after testing the model in two parts, testing the complete structural model. The complete structural model appears in Figure 2.

The SEM analysis outputs show that there is no problem during the iteration process which converges to a minimum. There is no significant difference between the sample data variance/covariance matrix and the model implied variance/covariance matrix which suggests that the full structural model fits the data correctly. The \( \chi^2 \) results are 75.433 (\( p = 0.105 \)) which is not significant and the factor coefficients range from 0.10 to 0.77. CFI = 0.957, RMSEA = 0.040, and PCLOSE = 0.747. The standardized residual co-variances exceed the absolute value of 2. This indicates that there is no misfit between this model and the data. It shows that the model explains 44% of the variance in sales growth and 59% of the variance in market share.

The analysis also shows that there are some relationships that are not significant (e.g., the internal drivers - globalization, collaboration/ideas – innovation, and globalization - performance relationships). The globalization – innovation relationship is in the range between significant and not significant. The standardized regression coefficients range from a low of 0.099 (drivers - globalization) to a high of 0.508 (drivers - innovation).

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**Insert Figure 2 about here**

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Third, the power of the model is tested using Statistica software. Table 2 presents a summary of the criteria for the power analysis which indicates the required sample size. The sample size required to arrive at 0.80 of the power with 57 degrees of freedom is 195. This indicates that the sample size used
in the analysis is satisfactory since the actual sample size is 204 compared to the required sample size of 195. With a sample of 204 firms, the model provides a power of 0.82.

Insert Table 2 about here

Figure 3 provides a graph of the power analysis for the complete SEM model. It shows power as a function of sample sizes ranging from 100 to 200. This graph demonstrates that power reaches an acceptable level (of 0.82) which is considered to be between 0.80 and 0.90 at a sample size of 195. This graph show the sample size required for a close fit.

Insert Figure 3 about here

Fourth, non-parametric tests were undertaken to determine if there were significant differences between the groups in relation to variables that demonstrated no significant results in the SEM analysis. A summary of the non-parametric analysis appears in Table 3.

There were no significant differences between globalized and non-globalized firms in connection with market share or sales growth. In the case of collaboration activities, the collaboration with clients and suppliers shows significant differences between the innovators and non-innovators. However, there were no significant differences between the groups in connection with collaboration within the enterprise group and with competitors. Other sources of ideas did not show differences between the groups; however, market sources of ideas did show differences between innovating and non-innovating firms.

Insert Table 3 about here

**Hypotheses Outcomes**

The data analysis confirmed most of the hypotheses. Specifically …

H1: Higher levels of globalization activities were hypothesized to result in higher levels of innovation activities. This hypothesis was confirmed. Other studies also have identified a relationship between globalization on innovation.

H2: Higher levels of innovation activities were hypothesized to result in better firm performance. This hypothesis was confirmed. This result is consistent with the results of previous studies.

H3: Higher levels of globalization activities were hypothesized to result in better firm performance. This hypothesis was not confirmed.

H4: Higher levels of internal drivers (profit, marketing, and/or legal) were hypothesized to result in higher levels of innovation activities. This hypothesis was confirmed.

H5: Higher levels of internal drivers (profit, marketing, and legal) were hypothesized to result in higher levels of globalization activities. This hypothesis was not confirmed.

H6: Higher levels of collaboration activities were hypothesized to result in higher levels of innovation activities. This hypothesis was not confirmed.

H7: Higher levels of collaboration activities were hypothesized to result in higher levels of globalization activities. This hypothesis was confirmed.
H8: Higher levels of collaboration activities were hypothesized to result in higher levels of drivers. This hypothesis was confirmed.

In summary, the research addresses two research questions. First, how do drivers (resources) and sources of ideas/collaboration activities influence innovation and globalization activities in SMEs? Second, how do innovation and globalization activities influence SME performance? The results show that the internal drivers and collaboration activities that SMEs choose have a strong influence on the innovation or globalization activities that they undertake. Similarly, innovation activities influence firm performance.

**RESEARCH IMPLICATIONS**

The research makes contributions at two levels. First, at the scholarly level, it contributes towards theory development by improving our understanding of the role of innovation and globalization in SME performance. It helps to develop a more holistic theory by including the innovation and globalization antecedents of internal business drivers and collaboration and examining their relationship to firm performance.

Second, at an applied level, the research provides insights for policy makers and management. For policy makers, this research provides insights that are useful in developing programs for educating entrepreneurs. These programs should address the necessity of implementing long term strategies that improve innovation activities since these enhance firm performance. Also, this research highlights the necessity of facilitating networking activities in order to improve globalization activities. Globalization activities facilitate the flow of knowledge and technology between firms. In relation to management, the research indicates the importance of the selection of strategies for developing innovation activities and the relevance of collaboration in developing globalization activities.

**DISCUSSION**

Overall, there was general support for the conceptual model. There were significant relationships in relationships such as, drivers – innovation, sources of ideas/collaboration – globalization, sources of ideas/collaboration – drivers, and innovation – performance. There also was a relationship that was in the limit of acceptance, globalization – innovation.

The results supported some of the previous studies undertaken in the area. For example, innovation activities have a positive influence on the performance of the firms. This relationship had been examined by Geroski and Machin (1992) and Darroch (2005) who found support for more innovative firms outperforming non-innovative firms. Moreover, Freel (2000) reported that innovation in small firms is associated with sales and employment growth, but it is not clear whether innovation is related to profitability and productivity.

The globalization and innovation relationship was in the limit of acceptance. It would seem that globalization activities have a positive influence on innovation activities (Lambooy, 2005). However, further analysis is proposed in the case of this relationship as the relationship was not as strong as was expected.

The relationship between drivers and innovation activities also demonstrate a positive result. This shows that the strategies or drivers that firms follow are positively connected with their innovation activities. This is consistent with the Oslo Manual (OECD, 2005b, p. 46) where it is assumed that firms apply innovation with a purpose such as to increase revenue. The model shows that firms that have specifically developed firm drivers have increased innovation activities.

The relationship between collaboration and drivers also shows positive results. This suggests that firms can obtain resources they need through collaboration (Ireland et al., 2002, Gulati et al., 2000, Doh, 2000). Having improved resources can lead to better strategy application.

Higher collaboration activities were also positively related to higher globalization activities. It would appear that more collaboration activities or inter firm relationships can positively influence the way that SMEs and micro firms undertake globalization activities. Globalization is a costly process and collaboration activities help to reduce cost and also risks (George et al., 2005).
Notwithstanding general support for the model, there were some unexpected results. First, there were no significant relationships between drivers – globalization. It appears that it is not necessary to have clear strategies or business drivers to improve globalization activities.

Second, there was no significant relationship between globalization and performance – globalized firms did not out-perform non-globalized firms. These results were unexpected since previous research supports a relationship between globalization activities and firm performance (Zahra and Garvis, 2000). We speculate that the difference between the two studies is based on firm size – SMEs versus larger firms.

Third, overall, the relationship between collaboration and innovation activities was not significant. Further analysis, however, demonstrated that there were significance differences between collaboration with suppliers and clients but not with competitors and within the enterprise group between innovative and non innovative companies. The non parametric tests showed that there were significant differences in marketing sources between innovative and non innovative firms.

**SUMMARY**

In summary, the results support some of the previous findings in the literature. The model developed in this research fitted the data appropriately and helped to explain underlying variables associated with innovation and globalization in a more holistic way. However, there were also some differences with previous findings. These differences may be explained by the focus in this study on SMEs.

**REFERENCES**


OECD (2005a) OECD Handbook on Economic Globalisation Indicators. OECD.


Figure 1: Conceptual Model

Table 1: Summary of Sample Demographics

<table>
<thead>
<tr>
<th>Details</th>
<th>SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Entity types</strong></td>
<td></td>
</tr>
<tr>
<td>Individual or sole trader</td>
<td>16.2%</td>
</tr>
<tr>
<td>Private companies</td>
<td>60.3%</td>
</tr>
<tr>
<td>Others</td>
<td>23.5%</td>
</tr>
<tr>
<td><strong>Duration of Business Operation</strong></td>
<td></td>
</tr>
<tr>
<td>Less than 4 years</td>
<td>18.3%</td>
</tr>
<tr>
<td>4 years to less than 9 years</td>
<td>24.1%</td>
</tr>
<tr>
<td>9 years to less than 19 years</td>
<td>30.5%</td>
</tr>
<tr>
<td>20 years or more</td>
<td>27.1%</td>
</tr>
<tr>
<td><strong>ANZSIC sectors</strong></td>
<td></td>
</tr>
<tr>
<td>Manufacturing</td>
<td>17%</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>12%</td>
</tr>
<tr>
<td>Professional , Scientific and Technical Services</td>
<td>27%</td>
</tr>
<tr>
<td>Construction</td>
<td>11%</td>
</tr>
<tr>
<td>Others</td>
<td>33%</td>
</tr>
<tr>
<td><strong>Innovation activities</strong></td>
<td></td>
</tr>
<tr>
<td>Innovative</td>
<td>86.3%</td>
</tr>
<tr>
<td>Non – innovative</td>
<td>13.7%</td>
</tr>
<tr>
<td><strong>Globalization Activities</strong></td>
<td></td>
</tr>
<tr>
<td>Globalized</td>
<td>59.8%</td>
</tr>
<tr>
<td>Non - Globalized</td>
<td>40.2%</td>
</tr>
</tbody>
</table>
Table 2: Summary of Required Sample Size

<table>
<thead>
<tr>
<th>Sample Size Calculation (IRISD) Structural Equation Modelling</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HO: R&lt;=RO</td>
<td></td>
</tr>
<tr>
<td>Population RMSEA (R)</td>
<td>0.080</td>
</tr>
<tr>
<td>Null Hypothesized RMSEA (RO)</td>
<td>0.050</td>
</tr>
<tr>
<td>Type I Error Rate (alpha)</td>
<td>0.050</td>
</tr>
<tr>
<td>Degrees of Freedom (df)</td>
<td>57</td>
</tr>
<tr>
<td>Power Goal</td>
<td>0.800</td>
</tr>
<tr>
<td>Actual Power for Required N</td>
<td>0.802</td>
</tr>
<tr>
<td>Required Sample Size (N)</td>
<td>195</td>
</tr>
</tbody>
</table>
Figure 3: Power Analysis

Structural Equation Modeling: Power Calculation

Structural Equation Modeling (H0: $R \leq R_0$)

Power vs. N ($R = 0.08$, $R_0 = 0.05$, $Df = 57$, $\alpha = 0.05$)

Table 3 Summary of Non-Parametric Analysis Results

<table>
<thead>
<tr>
<th>Relationship</th>
<th>SMEs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Globalization – Performance</td>
<td>No significant differences</td>
</tr>
<tr>
<td>Collaboration – Innovation</td>
<td>Significant differences in suppliers and clients collaboration, not within the enterprise and with competitors</td>
</tr>
<tr>
<td>Sources of ideas – Innovation</td>
<td>Significant differences in market sources of ideas, but not in other sources of ideas</td>
</tr>
</tbody>
</table>