An Empirical Investigation into Entrepreneurship and Organizational Innovation-based Competitive Strategy

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Abstract: For several decades, marketing researchers have stressed that firms can achieve competitive advantage by creating superior value for customers through innovation. However, the literature on entrepreneurship and innovation-based competitive strategy is deficient in several important respects. First, entrepreneurship has been poorly measured in the past. Next, research on innovation is biased towards technological innovation and new product development. Finally, robust measures of sustained competitive advantage have yet to emerge in the literature. This paper examines the role of entrepreneurship in organizational innovation-based competitive strategy. The study finds that entrepreneurial firms pursue both technological and non-technological innovations, and all such innovations lead to sustained competitive advantage. The study contributes to the emerging marketing and entrepreneurship interface paradigm by examining the role of entrepreneurship in the innovation-based competitive strategy and refining and testing measures of entrepreneurship, organizational innovation, and sustained competitive advantage.

INTRODUCTION

The rapidly changing global market has renewed the interest of researchers in the impact of entrepreneurship and innovation on competitive strategy. For several decades, marketing researchers have stressed that firms can achieve competitive advantage by creating superior value for customers through innovation (Drucker, 1985; Kanter, 1989; Schumpeter, 1934). Similarly, the literature on the emerging marketing and entrepreneurship interface paradigm stresses the need for research into the role of entrepreneurship on innovation-based competitive strategy to reach a better
understanding of the contribution of marketing concepts to the entrepreneurship field (Hills and La Forge, 1992). However, the literature on entrepreneurship and innovation based competitive strategy is deficient in several important respects. First, entrepreneurship has been poorly measured in the past. Next, research on innovation is biased towards technological innovation and new product development. The extant literature reflects the need to conceptualize innovation broadly incorporating both technological and non-technological innovation. Finally, robust measures of sustained competitive advantage have yet to emerge in the literature. This article contributes to the competitive strategy literature and in particular to the marketing and entrepreneurship paradigm by examining the relationship between entrepreneurship and innovation based competitive strategy and refining and testing measures of entrepreneurship, organizational innovation, and sustained competitive advantage. This article also explores the links between these constructs and argues that entrepreneurship and innovation are critical antecedents of sustained competitive advantage.

This paper proceeds as follows. First, we examine the extant literature on entrepreneurship, organizational innovation and sustained competitive advantage. Second, we discuss the conceptual framework describing the theoretical relationships intended to be tested. Third, we discuss the method used to test the hypotheses. Next the results, based on analysis of data collected from 324 manufacturing firms, are presented. The paper concludes by discussing implications for management theory and practice, identifying limitations of the study and providing directions for future research.

CONCEPTUAL FRAMEWORK

The literature on the emerging marketing and entrepreneurship interface paradigm emphasizes the need to explore how well existing marketing models and the traditional marketing paradigm fit the environment, behavior and processes found in entrepreneurial organizations (Muzyka and Hills, 1993). To advance research at the marketing and entrepreneurship interface it is necessary to develop, adopt and apply robust theories and concepts that are representative of the social environment in which entrepreneurial marketing will occur (Hills and La Forge, 1992). Researchers pursuing this path are emphasizing the need to investigate entrepreneurship and the value creating process of the firm. The firms perceiving new ways of creating superior value to its customers gain competitive advantage, which is an act of innovation (Porter, 1985). Innovation is not only uniquely relevant to
marketing but also a key factor identifying entrepreneurship. (Hills and La Forge, 1992). Therefore innovation based competitive strategy is a fertile ground in which marketing and entrepreneurship interface research will flourish.

Our conceptual framework attempts to link entrepreneurship, innovation, and sustained competitive advantage. We begin with a review of extant literature addressing inadequacies in past research in the conceptualization of these constructs. We argue that entrepreneurial firms striving to achieve sustained competitive advantage pursue the path of innovation. Interrelationships among entrepreneurship, organizational innovation and sustained competitive advantage are examined.

ENTREPRENEURSHIP

Literature suggests a positive association between “entrepreneurship” and the growth-oriented efforts of the firm. An entrepreneur is an independent owner/manager who possesses innovative abilities and makes strategic decisions for his/her firm (Shapiro, 1975; Miller, 1983). Entrepreneurial organizations often initiate actions to which competitors then respond, and are frequently first-to-market with new product offerings (Khandwalla, 1977). There is no commonly accepted definition of entrepreneurship (Low & Macmillan, 1988; Kent, 1984; Kilby, 1971; Wortman, 1986). However, the selection of an entrepreneurial model depends on the information the researcher wishes to emphasise in focussing on different aspects of the entrepreneurial process (Cunningham & Lischeron, 1991). Recently, a firm-behaviour model of entrepreneurship has gained popularity among strategy researchers. The model suggests that entrepreneurial firms display innovativeness, proactiveness and risk-taking propensity in their strategic decision-making (Covin & Slevin, 1986). ‘Entrepreneurship is described as dimensions of a firm’s risk-taking propensity, tendency to act in competitively aggressive, proactive manners, and reliance on frequent and extensive product innovation’ (Covin & Slevin, 1991:7). Proponents of this model argue that a firm-behaviour model of entrepreneurship has a number of advantages over more traditional entrepreneurship models and theories that focus on traits of the individual entrepreneur (Covin & Slevin, 1986; 1991; Namen & Slevin, 1993; Gartner, 1988; Stevenson & Jarillo, 1990). Considering the level-of-analysis issue, a firm-level model of entrepreneurship is appropriate because entrepreneurial effectiveness is arguably a firm-level phenomenon. Secondly behaviours rather than attributes are what give meaning to the entrepreneurial process. Thirdly behavioural manifestations of entrepreneurship, can be reliably, verifiably
and objectively measured thus enabling researchers to differentiate between firms with different levels of entrepreneurial intensity. We observe that the behavioural model of entrepreneurship is more appropriate to examine innovation-based competitive strategy which itself is a behavioural manifestation of the aspirations of the firm to achieve competitive advantage in its target markets.

There is some empirical evidence to suggest a link between entrepreneurial behavior and firm performance (Covin & Slevin, 1986; Schaefer, 1990). Similarly the components of the entrepreneurship scale are positively related to other performance related outcomes, for example, risk taking and technological innovation (Khan & Manopichetwattana, 1989; Lefebvre & Lefebvre, 1992), proactiveness and technological innovation (Khan & Manopichetwattana, 1989). However, this conceptualization of entrepreneurship has not been tested in an organizational innovation context.

ORGANIZATIONAL INNOVATION

Schumpeter (1934), one of the pioneers of the classical entrepreneurship thought, argued that innovation is the central characteristic of entrepreneurial behaviour. He suggests that an entrepreneur displays a five-fold innovative activity: (1) introduction of new goods, (2) introduction of new methods of production, (3) opening new markets, (4) opening new sources of supply, and (5) industrial reorganisation. These innovations cover a broad range of organisational activities. Similarly Porter (1990) suggests that firm innovation and competitive advantage process is closely inter-connected. Firms create competitive advantage by conceiving new ways to conduct the activities within the value-chain for delivering superior customer value, which is, itself, an act of innovation. This suggests, firstly, that innovation leads to competitive advantage. Secondly, innovation can occur in any value-creating activity of the organization. Thirdly, all types of innovations can lead to sustained competitive advantage.

Recent research provides evidence to support the view that organisational innovation is a viable and strong option in both domestic and global competitive strategy. Empirical evidence supporting this view comes from several sources. Research examining innovation and firm performance suggests that innovation leads to higher performance (Soni et al., 1993; Hyvarinen, 1990; Rothwell, 1992; Lengnick-Hall, 1992; Lefebvre et al., 1993). Innovative capabilities distinguish the more successful from the less successful growing small and medium-size enterprises (Statistics Canada,
Literature on export market penetration strategies suggests that innovation enables small firms to enter export markets and maintain or increase those markets once entry has been made (McKinsey & AMC, 1993; BIE 1993; Brush 1992). Successful innovation can play a critical role in small manufacturing firm export performance (Macpherson, 1992; Kleinschmidt & Cooper, 1990; Ong & Pearson, 1982) even over the short run (Ditchel et al., 1990). Small high-tech firms challenge the conventional wisdom by entering global markets bypassing domestic markets with innovative products (McKinsey & Company and AMC, 1993). Although the literature suggests that innovation should be conceptualized to cover a broad range of activities (Schumpeter, 1934; Porter, 1985; Thompson, 1965; Zaltman, Duncan & Holbek, 1973; Damanpour, 1991; Rothwell, 1992), past innovation research is biased toward technological innovation (William & Novak, 1990; Blois, 1988; Thurow, 1987). However firms undertake both technological and non-technological innovations (McKinsey & Company 1993; AMC, 1995) and all such innovations lead to sustained competitive advantage in global markets (AMC, 1995). This discussion whilst suggesting that innovation is a key source of competitive advantage highlights the need to conceptualize this construct broadly in examining its influence on sustained competitive advantage. Premised on the organizational learning approaches to innovation (Tushman & Nadler, 1986; Dewar & Dutton, 1986) we conceptualize the organizational innovation construct as a process in which the waves of knowledge acquired by the firm through external and internal sources are integrated into all value creating activities of the firm.

The extant literature also reflects the need for a composite measure of organizational innovation. Organizational innovation can be broadly classified in terms of the nature of value creating activities as technological and non-technological innovation. The most widely examined technological innovation types are product and process innovation (e.g. Damanpour 1991; Meyer-Krahmer, 1984; Kim et al., 1993). The literature on non-technological innovation has grown in volume over last few decades (Damanpour & Évan, 1984; BIE, 1993; Knight, 1967) and recent literature classifies this innovation category as managerial and marketing methods innovation (AMC, 1995).

Similarly innovation can be classified in terms of the degree of innovation. Broadly the degree of innovation ranges from incremental to radical innovations (McKinsey & Company, 1993; Norman, 1971; Tushman & Nadler, 1986; Nord & Tucker, 1987). Incremental and radical innovations pertain to distinctions along a theoretical continuum (Dewar & Dutton,
Incremental innovations provide an “innovating thrust” that develops existing strengths of the organization, whereas radical innovations (transformational innovations) provide a ‘strategic leap’, which results in sustained growth in business organizations (The Innovation Study Commission, 1993). In this paper we operationalize the organisational innovation construct incorporating the type and the degree of innovations thus paving way for a composite measure of organisational innovation.

Sustained Competitive Advantage

There is little consensus among researchers on the term “sustained competitive advantage” (Day & Wensley, 1988). However, competitive advantage can be conceptualized as a superior “marketplace position” that captures the provision of superior customer value and/or the achievement of lower relative costs, which results in market share dominance and superior financial performance (Hunt & Morgan, 1995). Much of the existing research uses superior financial performance or “rent” as an indicator of competitive advantage (Aharoni, 1993; McGrath et al., 1996; Porter, 1985). Sustained competitive advantage is believed to be simply a competitive advantage that lasts a long period of calendar time (Jacobson, 1988; Porter, 1985). These views particularly those advocating the use of financial indicators have attracted criticism from recent literature (Barney, 1991; Day & Wensley, 1988) and we observe the need to conceptualize this construct by incorporating well-founded and realistic indicators of sustained competitive advantage. We concur with Day and Wensley (1988) who do not totally discard financial indicators of sustained competitive advantage. They suggest strengthening financial indicators with comprehensive indicators of market advantages. In assessing competitive advantage it is important to balance ‘competitor centered’ and ‘customer centered’ methods of assessing advantage. One of the key ‘competitor-centered’ methods of measurement is assessing the distinctive capabilities on which advantages have been founded (Day & Wensley, 1988).

Our conceptualization of this construct is premised on the capability-based model of sustained competitive advantage (Hayes et al. 1996; Prahalad & Hamel, 1990; Grant 1991). This model compared to the environmental model (Bain, 1956; Hill, 1988; Porter, 1985) and the resource-based model (Barney, 1986; 1988; Dierickx & Cool, 1989; Lippman & Rumelt, 1982; Reed & DeFillippi, 1990) provide a satisfactory explanation of the value-creation process and service delivery by assigning a prominent role to the strategic leadership of the organization (Mahoney, 1995; Lado et al., 1992). The capability-based theory suggest that the sustainability of advantage...
depends on whether it is possible for competitors to duplicate (a) the firm’s competitive strategy, and (b) distinctive capabilities on which advantages have been founded.

Based on the foregoing discussion we conceptualise the sustained competitive advantage construct in terms of three criteria: (a) market advantages gained by the firm, (b) whether it is possible for competitors to duplicate innovations, and (c) whether it is possible for competitors to duplicate distinctive capabilities on which advantages have been founded.

HYPOTHESIS

Based on the foregoing discussion we advance the following hypotheses.

H1: There is a positive relationship between entrepreneurial intensity and organizational innovation intensity.

H2: There is a positive relationship between organizational innovation and sustained competitive advantage.

H3: There is a positive relationship between entrepreneurial intensity and sustained competitive advantage.

RESEARCH METHODOLOGY

Research Context

The research context for this study was regional firms in the machinery and equipment manufacturing and metal product manufacturing industries. These two industries were selected to examine the hypotheses for several reasons. Restricting the sampling frame to this sector minimizes extraneous sources of variation. Further, in these sectors, firms are engaged in both technological and non-technological innovation. An initial version of the questionnaire was developed based on the preliminary interviews and a review of past research. The questionnaire was pre-tested in a series of 25 qualitative interviews with chief executive officers. Piloting was undertaken via directly administering the questionnaire to chief executive officers who took no part in the main study. At this stage, no particular problems with the measures or response formats were revealed.
Sample Characteristics

The sampling frame for our study was a regional mailing list of 1,272 manufacturing firms. A survey packet including a personalized cover letter and self-administered questionnaire was sent to each firm. The survey was closed out two months after the initial mailing. A total of 328 questionnaires were returned during this period. Two questionnaires were eliminated because of excessive amounts of missing information. The 326 useable questionnaires that were returned yielded a response rate of 25.6 percent. Missing values were treated using listwise deletion, which resulted in an effective sample size of 324 observations.

Additional efforts to collect data from non-respondents were not possible due to financial constraints. However, the response rate is comparable to other survey research efforts in marketing (e.g., Lusch and Brown 1996). The Armstrong and Overton (1977) technique of comparing early and late respondents was used to examine non-response bias. Comparing waves of early and late respondents on a range of firm characteristics revealed no significant differences ($p > 0.05$) and suggests that non-response bias may not be a problem.

Further, the sampling method succeeded in providing observations that varied greatly on firm characteristics. The firms represented in the sample varied widely in size, as measured by annual sales (mean = $14$ million; standard deviation = $44$ million) or number of employees (mean = 65 employees; standard deviation = 177 employees). On average, the firms in the sample had been operating for 24 years (standard deviation = 21.7 years). Approximately 58 percent of firms in the sample were competing in export markets. Further, these firms had been competing in export markets for nine years (standard deviation = 8.1 years). Thus, we were successful in tapping into a variety of firms.

MEASURES

All of the theoretical constructs in our conceptual model are measured using multi-item scales. These scales are drawn from extant literature and empirical research. The specific items and response formats are shown in the Appendix One.
Entrepreneurial Intensity

The entrepreneurial intensity scale captures the extent to which the firm’s strategic leaders are innovative, proactive and risk seeking. High scores on this scale indicate that the firm’s key decision-makers value innovation, proactiveness and have a high tolerance for risk. The specific items used are derived from Covin and Slevin (1991) and Naman and Slevin (1993).

Organizational Innovation Intensity

The innovation intensity scale captures the extent of the firm’s product, managerial, and marketing innovations. This definition reflects the importance of a broader conceptualization of innovation that incorporates both technological and non-technological innovation (Damanpour, 1991; Hyvarinen, 1990). High scores on the innovation intensity scale indicate that the firm has introduced radical innovations in its product, managerial, and marketing systems. Our measures incorporate both the degree and types of innovation.

Sustained Competitive Advantage

The competitive advantage scale captures the extent to which the firm’s innovations and distinctive capabilities resist erosion by competitors’ efforts. The composite measure developed for this study is based on Day and Wensley’s (1988) view that measures of sustained competitive advantage should reflect more than simply financial performance. High scores on the competitive advantage scale suggest that innovations have enabled the firm to achieve superior market advantages and competitors are unable to duplicate the firm’s innovations and distinctive capabilities on which advantages have been founded.

ANALYTIC TECHNIQUE

Using the LISREL program (Joreskog & Sorbom, 1996), we conducted our analysis in two main stages. The first stage was a confirmatory factor analysis of each of the theoretical constructs. The second stage involved the estimation of a structural model that captured the relationships between each of the theoretical constructs. The two-stage approach has a number of comparative strengths that allow meaningful inferences to be made (Anderson & Gerbing, 1988). When faced with measures that are less reliable or theory that is only tentative, the researcher should consider a staged approach to maximize the interpretability of both measurement and structural models (Hair et al., 1995). The confirmatory factor analysis for
each theoretical construct was estimated using LISREL 8 (Joreskog & Sorbom, 1996). Confirmatory factor analysis models are useful for assessing the reliability of measures and verifying unidimensionality (Anderson and Gerbing, 1988). Following the estimation of the measurement models, a structural model was estimated for an examination of the hypotheses. Composite variables were created using the results from the confirmatory factor analysis models. This modelling strategy is efficient and requires the estimation of fewer parameters. Further details of the modelling strategy and related results are available from the authors upon request.

RESULTS

Results for the measurement models are shown in Exhibits One, Two and Three in Appendix Two. The measures appear to be reliable and valid indicators of the latent constructs. Estimating the structural model provided a significant chi-square value ($\chi^2=235.43$, df = 32). The large chi-square is expected given the statistic’s sensitivity to sample size. The following indices provided evidence of good fit to the sample data (RMR= 0.07, GFI= 0.87, CFI= 0.85). As predicted the path from entrepreneurial intensity to organizational innovation intensity was positive and significant ($\beta = 0.79$, $t = 7.50$). The path for entrepreneurial intensity to sustained competitive advantage is also positive and significant ($\beta = 0.24$, $t = 2.16$). Finally, the path from innovation intensity to sustained competitive advantage was positive and significant ($\beta = 0.64$, $t = 4.38$). Furthermore, the theoretical model explains 38% and 25%, respectively, of the variation in the endogenous constructs: innovation intensity and SCA. Overall, the model appears to fit the sample data well.

DISCUSSION AND IMPLICATIONS

Collectively, the results provide support for our conceptual framework. The theoretical constructs operate largely as hypothesized. A central theme of our research is that entrepreneurial firms striving to gain competitive advantage pursue organisational innovation. The results of the study support this position. Prior research has found that the components of the behavioural measure of entrepreneurship positively relate to innovation particularly to technological innovation. However this measure has not been tested in relation to organisational innovation. Therefore the results suggest that entrepreneurial firms in their pursuit of competitive advantage adopt both technological and non-technological innovation. Moreover, the results suggest that innovation is not confined to technological advances as
conceptualised in past research. Innovation also can be manifested in new marketing and distribution strategies, innovative reward structures and departmental structures that add value to both the firm and customers.

Further, we argue that any firm can adopt an entrepreneurial posture by displaying innovativeness, a high tolerance for risk-taking, and proactiveness. Entrepreneurs are not “born” as suggested in conventional theories; rather firms can be guided and educated to become entrepreneurial in their strategic decisions. This approach to conceptualise entrepreneurship has important implications to government policy planning aimed at facilitating firm performance in that firms can be encouraged to adopt an entrepreneurial posture in their approaches to dealing with environmental challenges.

A further key theme of our paper was that innovation intensity leads to sustained competitive advantage. The results of our study largely support this position. Moreover, an important implication of findings is that entrepreneurial firms pursue both technological and non-technological innovations to gain competitive advantage. Specifically the study finds that non technological innovations impact on competitive advantage. This provides empirical support to the long held view that all forms of innovation lead to sustained competitive advantage (Porter, 1990; AMC, 1995). Perhaps the respecification of most interest is the direct path from entrepreneurial intensity to competitive advantage. Though the initial model suggests only an indirect effect, our results indicate that firms, which are proactive and have a high tolerance for risk, are able to achieve a competitive advantage.

Overall the study findings contribute to the emerging marketing and entrepreneurship interface paradigm by examining the relationship between entrepreneurship and innovation-based competitive strategy. The proponents of the Marketing / Entrepreneurship Interface paradigm stress the significance of examining this research path for the improvement of the study and practice of entrepreneurship (Hills and La Forge, 1992). The current study refines and validates the behavioural entrepreneurship scale of Slevin and Covin (1986) by testing it in context that has not been undertaken in prior research. Similarly, the study addresses weaknesses associated with past approaches to operationalise innovation and sustained competitive advantage and develops and test composite measures for these constructs.
The model also presents managers with a feasible path for building sustained competitive advantage. Firms striving to gain competitive advantage should pursue an innovation-based competitive strategy. Innovation, in this paper, is conceptualised as a process in which knowledge acquired by the firm is integrated into products, processes, marketing methods and managerial systems. The capability-based theory on which sustained competitive advantage construct is founded suggests that firms gain competitive advantage by building and nurturing distinctive capabilities. Accordingly firms must invest in building and nurturing learning capabilities. Importantly, managers should recognize that building learning capabilities is an expensive and sometimes tedious undertaking (Hayes, Pisano, and Upton, 1996). The process involves first developing certain resources, then selecting a few of these resources and devoting the time and energy necessary to develop them into capabilities, and finally polishing and refining a very few capabilities to the point where they become the basis for competitive advantage.

LIMITATIONS

Though the study provides some useful insights into the determinants of competitive advantage, certain limitations should be recognized. First, we used single-informant reports to measure each of the theoretical constructs. An alternative approach would have been to use multiple-informant reports. Although the difficulties associated with collecting and modelling information from multiple-informant reports are well recognized by marketing researchers (Kumar, Stern, and Anderson, 1993). Second, the cross-sectional research design limits the extent to which inferences can be made about the causal ordering of variables. Next, the research context is an appropriate setting for examining the conceptual framework, although research in other industry sectors may be required. For example, the pace of technological change in some industries may differ from that in the manufacturing sectors that we studied. Finally, our sampling strategy does not allow us to capture the experiences of firms, which have ceased trading. Thus, the possibility exists that some firms may have unsuccessfully pursued the innovations described here.

DIRECTIONS FOR FUTURE RESEARCH

Future research may be directed to validate and refine the measures used in this study. An interesting extension would be to test this theoretical framework in a small firm context. Our conceptualisation of the sustained competitive advantage construct was premised on the capability-based
theory of competitive advantage. This approach to competitive advantage suggests that firms possessing distinctive capabilities gain competitive advantage. Future research may examine the specific capabilities that enable entrepreneurial firms to gain sustained competitive advantage. Finally, other constructs might be included in the proposed model. For instance, industry characteristics may be important moderators of the relationship between innovation intensity and competitive advantage (cf. Bharadwaj, Varadarajan, and Fahy, 1993).

CONCLUSIONS

The results support the broad hypothesis that entrepreneurial firms gain SCA by pursuing innovation-based competitive strategies. The findings validate the behavioral model of entrepreneurship by providing evidence that behavioral measures are positively related to organizational innovation intensity. The findings also suggest that entrepreneurial firms, in their efforts to gain competitive advantage, pursue both technological and non-technological innovations. The study contributes to the competitive strategy research by formulating and testing multi-dimensional measures for organizational innovation and SCA constructs. Refining and testing these measures is an achievement and contribution in itself.

REFERENCES


Innovation Study Council (1993), Business Council of Australia, Managing the Innovating Enterprise, Information Australia, Melbourne


APPENDIX ONE – MEASURES OF CONSTRUCTS

*Entrepreneurial Intensity.*

Ten-item, five-point scale. Items included: Managers place a strong emphasis on innovation; Our organization initiates actions to which competitors respond; The firm over the last five years marketed many new products/services; Changes in products/services over the last five years have been dramatic; When dealing with competitors the firm typically initiate action; Often the firm is the first to introduce new products; The firm has a very competitive posture; Managers have a strong tendency for high risk investments; Managers have a policy of growth primarily financed through external sources of borrowing; Managers believe that bold changes are necessary to achieve the firm’s objectives; and When confronting uncertainty our organization adopts a “bold and aggressive” posture.

*Organizational Innovation Intensity.*

Eight-item, five-point scale, anchored by “changes have been incremental” and “changes have been radical.” Items included product innovation, process innovation, managerial innovation, and marketing innovation.

*Sustained Competitive Advantage.*

Thirteen-item, five-point scale, anchored by “easy for competitors to duplicate” and “difficult for competitors to duplicate.” Items were: Whether competitors can duplicate market advantages gained by the company; Whether the competitors can duplicate organisational innovations achieved by the firm; and Whether the competitors can duplicate capabilities on which competitive advantages have been founded.
APPENDIX TWO: – EXHIBITS ONE to THREE - RESULTS

EXHIBIT ONE:
STANDARDISED LISREL ESTIMATES FOR
ENTREPRENEURIAL INTENSITY CONSTRUCT

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Innovativeness</th>
<th>Proactiveness</th>
<th>Risk taking</th>
</tr>
</thead>
<tbody>
<tr>
<td>I1</td>
<td>.649 (t=12.296)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I2</td>
<td>.819 (t=16.747)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I3</td>
<td>.797 (t=16.142)</td>
<td></td>
<td>.809 (t=16.626)</td>
</tr>
<tr>
<td>P1</td>
<td></td>
<td>.888 (t= 18.830)</td>
<td></td>
</tr>
<tr>
<td>P2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R1</td>
<td></td>
<td>.476 (t=8.467)</td>
<td></td>
</tr>
<tr>
<td>R2</td>
<td></td>
<td>.749 (t=14.785)</td>
<td></td>
</tr>
<tr>
<td>R3</td>
<td></td>
<td>.422 (t=7.395)</td>
<td></td>
</tr>
<tr>
<td>R4</td>
<td></td>
<td>.828 (t=16.926)</td>
<td></td>
</tr>
<tr>
<td>R5</td>
<td></td>
<td>.771 (t=15.353)</td>
<td></td>
</tr>
</tbody>
</table>

Goodness-of-fit statistics
Chi-square (32) = 100.58
RMR = 0.053
GFI = 0.942
CFI = 0.952

EXHIBIT TWO:
STANDARDISED LISREL ESTIMATES FOR INNOVATION INTENSITY CONSTRUCT

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Product</th>
<th>Process</th>
<th>Managerial</th>
<th>Marketing</th>
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<tbody>
<tr>
<td>P1</td>
<td>.829(t=15.001)</td>
<td></td>
<td></td>
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<tr>
<td>P2</td>
<td>.816 (t=14.768)</td>
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<td>P3</td>
<td></td>
<td>.895 (t=19.348)</td>
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<td>P4</td>
<td></td>
<td>.925 (t=20.288)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M5</td>
<td></td>
<td></td>
<td>.934 (t=20.695)</td>
<td></td>
</tr>
<tr>
<td>M6</td>
<td></td>
<td></td>
<td>.903(t=19.671)</td>
<td></td>
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<td>M7</td>
<td></td>
<td></td>
<td></td>
<td>.964(t=21.805)</td>
</tr>
<tr>
<td>M8</td>
<td></td>
<td></td>
<td></td>
<td>.922(t=20.351)</td>
</tr>
</tbody>
</table>

Goodness-of-fit statistics
Chi-square (14) = 55.15
RMR = 0.02
GFI = 0.96
CFI = 0.98
### EXHIBIT THREE:
**STANDARDISED LISREL ESTIMATES FOR SUSTAINED COMPETITIVE ADVANTAGE CONSTRUCT**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Financial</th>
<th>Innovations</th>
<th>Capability differential</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1</td>
<td>.769 (t=15.795)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F2</td>
<td>.843 (t=18.100)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>F3</td>
<td>.687 (t=13.530)</td>
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<td></td>
</tr>
<tr>
<td>F4</td>
<td>.794 (t=16.540)</td>
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</tr>
<tr>
<td>F5</td>
<td>.786 (t=16.318)</td>
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<tr>
<td>I6</td>
<td></td>
<td>.595 (t=11.048)</td>
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<td>I7</td>
<td></td>
<td>.729 (t=14.329)</td>
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<tr>
<td>I8</td>
<td></td>
<td>.769 (t=15.413)</td>
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</tr>
<tr>
<td>I9</td>
<td></td>
<td>.747 (t=14.816)</td>
<td></td>
</tr>
<tr>
<td>C10</td>
<td></td>
<td></td>
<td>.827 (t=17.266)</td>
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<td>C11</td>
<td></td>
<td></td>
<td>.778 (t=15.819)</td>
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<td>C12</td>
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<td></td>
<td>.584 (t=10.864)</td>
</tr>
<tr>
<td>C13</td>
<td></td>
<td></td>
<td>.740 (t=14.759)</td>
</tr>
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</table>

Goodness-of-fit statistics
- Chi-square (62) = 422.64
- RMR = 0.061
- GFI = 0.821
- CFI = 0.85