THE RELATIONSHIPS BETWEEN THE ANTECEDENTS OF INNOVATIVENESS AND BUSINESS PERFORMANCE:
FOCUSED ON THE MODERATING OF ORGANIZATIONAL STRUCTURE AND THE MEDIATING ROLE OF LEARNING ORIENTATION

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ABSTRACT

Examining the antecedents of innovativeness and these relationships with business performance has received considerable interest in the last decade. Despite these interests, our understanding of the structure of among the antecedents of innovativeness such as learning orientation, market orientation, and entrepreneurial orientation and the mechanism of those effects on business performance is apparently limited in figuring out the industry of Korea.

The purpose of this research is to analyze the relationships among innovativeness, learning orientation, market orientation, entrepreneurial orientation, organizational structure, and business performance. The study designed a structural equation model to test the relationships. In order to test the model, covariance structural analyses were conducted for the data collected from 333 venture companies including Inno-Biz companies in Korea. The results indicated several significant findings. The most notable finding is that learning orientation plays a full mediating role in the relationships between market orientation and innovativeness. In addition to this finding, two types of organizational structure such as decentralization and formalization play a moderating role in the relationships among the antecedents of innovativeness and business performances. Further discussion, implications, limitation of this study and future direction were suggested.

Key words: Innovativeness, Learning Orientation, Market Orientation, Entrepreneurial Orientation, Organizational Structure, Inno-Biz, Venture companies
INTRODUCTION

In recent years, numerous studies have attempted to find and explore the relations between innovativeness and performance, since the innovativeness play an important role in a key success factor to gain a sustainable competitive advantage. Innovativeness is related to the firm’s capability to engage in innovation such as the introduction of new process, products, or ideas in the organization (Hurley et al., 2003). This capacity to innovate is one of the most important factors that impact on business performance (e.g., Burns and Stalker, 1961; Hurley and Hult, 1998; Porter, 1990; Schumpeter, 1934).

Organizational theory researchers have reached nearly universal consensus that innovativeness plays a positive effect on business performance, while relatively little is known about the drivers of innovativeness and how those drivers operate via innovativeness to influence collectively business performance. More specifically, scholars emphasize the significance of market orientation (Narver and Slater, 1990; Jaworski and Kohli, 1993), learning orientation (Sinkula, 1994; Slater and Narver, 1995), entrepreneurial orientation (Lumpkin and Dess, 1996; Hurley et al., 2003) and organizational structure such as decentralization and formalization (Meyer, 1982; Slater and Narver, 1995) for gaining a competitive advantage. Nevertheless, so far, there is no studies of how these constructs interact and further collectively affect business performance, except for Hurley and his colleagues’ research(2003).

Hurley and his colleagues(2003) studied the relationship among three antecedents - market orientation, learning orientation and entrepreneurial orientation - , innovativeness, and business performance. They found that market orientation, entrepreneurial orientation and innovativeness have great effects on business performance. However, their study has a critical point that generalization of the results remains limited to large companies (Fortune 500). It means that the findings would not be applied to venture companies or small and medium-sized enterprises (SMEs). Furthermore, regarding market orientation, learning orientation and entrepreneurial orientation all as the same independent variables, the study does not appear to be conducted sufficiently deeper research of interaction among these variables.

Especially, to date, there has been minimal research regarding a mediating role of learning orientation in the relationships among market orientation, entrepreneurial orientation, innovativeness, and business performance, and moderating role in the relationships between the antecedents of innovativeness and business performances.

Thus, the main purpose of this paper is to analysis such variables as provide a quantitative analysis for the claims that such variables as learning orientation, market orientation, entrepreneurial orientation, and innovativeness function as a key success factor of technology-intensive firms. In an effort to evaluate the relationships, not only formulate we also structural equation model, but this findings also will contribute to the understanding of the relationships among those constructs.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

The relationship between learning orientation and its antecedents

Although there are some disagreements about the antecedents of learning orientation among authors, much research has been revealed a strong relationship between market orientation and learning orientation (Day, 1994; Slater and Narver, 1995; Sinkula, Baker and Noordewier, 1997; Baker and Sinkula, 1999, 2002). Essentially, market orientation requires a significant degree of organizational learning, while learning orientation may not necessarily seek information asked for market orientation. To this end, although the terms may be highly related, market and learning orientation are not interchangeable. A number of researchers (e.g., Day, 1994; Bell et al., 2002) have agreed on the view that learning orientation and market orientation are mutually dependent.
Narver and Slater (1990) found a positive relationship between market orientation and business profitability where market orientation is primarily concerned with learning orientation, as well as they (1995) argue that market orientation is the foundation on which organizational learning occurs. As in the study of Hurley and Hult (1998), learning orientation is indispensable to the successful adoption of both market and entrepreneurial orientation (e.g., Hurley and Hult, 1998). Van De Van (1986) and Trice and Beyer (1991) assert that entrepreneurial orientation is closely linked to such innovativeness as innovative activities and culture.

**H1**: Market orientation will be positively related to learning orientation.

**H2**: Entrepreneurial orientation will be positively related to learning orientation.

The relationships between innovativeness and learning orientation and business performance

Many scholars have found the significant result, the significant result that learning orientation and innovativeness are highly correlated (Goes and Park, 1997; Sinkula et al., 1997; Hurley and Hult, 1998; Baker and Sinkula, 1999, 2002; Calantone et al., 2002; Hurley et al., 2003). Calantone and his colleagues (2002) argue that the higher learning orientation is, the higher the influence on innovativeness is. Cohen and Leventhal (1990) find that learning orientation is significantly associated with the advance of innovative thought in organizations. As well, Hurley and his colleagues (2003) also assert that learning orientation is one of the most important antecedents of innovativeness.

Because of much research on the relationships between innovativeness and organizational performance, it has been revealed that innovativeness is consistently related to business performance (Cooper and Dunkelberg, 1987; Kohli and Jaworski, 1990; Damanpour, 1991; Cahill, 1996; Cooper, 2000; Calantone et al., 2002; Hurley et al., 2003). For instance, Hurley and his colleagues (2003) prove convincingly that innovativeness is an important determinant of business performance. As far as the measurement of business performance was concerned, many (Narver and Slater, 1990; Jaworski et al., 1993; Greenley, 1995) have made use of objective performance. Proceeding from what has been said above, it should be hypothesized:

**H3**: Learning orientation will be positively related to innovativeness.

**H4**: Innovativeness will be positively related to business performance.

Mediating effect of learning orientation and Mediating effect of organizational structure

This study argues that market orientation and entrepreneurial orientation are likely to be mediated by factors that impact directly on innovativeness, focused particularly on a mediating role of learning orientation in their relationship, as well as organizational structure will be likely to moderate the relationships between innovativeness and business performance.

Calantone et al (2002) was referred to as that learning orientation has a positive effect on innovativeness and learning orientation plays a mediating role in the relationship between market orientation and innovativeness.

Affected by Jaworski and Kohli’ study (1993) that, whereas a strong market orientation is indicative of a propensity to innovate, it is not necessarily indicative of a propensity to innovate optimally. Baker and Sinkula (2002) and Slater and Narver (1995) empirically concluded that market orientation is only likely to significantly enhance business performance when it is combined with a strong learning orientation.

Hurley and Hult (1998) even suggest that learning orientation is necessary for the successful adoption of both market and entrepreneurial orientation. According to Hurley and his colleagues’ analysis (2003), entrepreneurial orientation is one of the most critical drivers of firm innovativeness. The same is true of the Liu and his colleagues’ studies (2002). They have concluded that organizational learning is related to the development of
new knowledge, which in turn, is essential to firm innovativeness and firm performance.

Slater and Narver (1995) argued that organizational structure is associated with innovativeness and organizational performance. It is consistent with Burns and Stalker’s (1961) and Greenberg’s (1999) studies that argue that organic and decentralized organizational structure copes quickly with change and further creates innovativeness. It means that organizational structure is closely associated with innovativeness. In terms of the relationship between organizational structure and innovativeness, an organization should be needed to design fitted to pursuing innovativeness, since innovativeness gives a positive effect on the organizational effectiveness. Meyer (1982) argued that a high level of formalization has a tendency to impede learning affecting innovativeness. Slater and Narver (1995) assumed that innovativeness will augment in a decentralized organizational structure which has easily information sharing. With regard to the upper research, we can know that there are some relationships among organizational structure, innovativeness, and business performance are directly prefigured by the above research. Consequently, the discussion above suggests that:

**H5-1:** Learning orientation will mediate the relationship of market orientation to innovativeness.

**H5-2:** Learning orientation will mediate the relationship of entrepreneurial orientation to innovativeness.

**H6-1:** Formalization will moderate the relationship of innovativeness to business performance.

**H6-2:** Decentralization will mediate the relationship of innovativeness to business performance.

**RESEARCH MODEL**

To test hypotheses, we construct a structural equation model of the relationships among market orientation, entrepreneurial orientation, learning orientation, organizational structure, innovativeness, and business performance (see Figure 1).

![Figure 1: Research Model](image-url)
METHOD

Sample and Data

Data for this study were collected from Inno-Biz and other venture companies in Korea. Inno-Biz (a compound of ‘Innovation’ and ‘Business’) companies are called technology-intensive SMEs in Korea and a total of 3,014 companies were authenticated by the second quarter of 2005. Of approximately 2,000 questionnaires distributed, 354 were returned, resulting in the response rate of 17.7%. Of the 354 questionnaires collected, only 333 were used in the final analysis, with those missing significant amounts of data being excluded.

Measures

All constructs were measured on a Likert scale ranging from 1 to 5(1=strongly disagree, 2=disagree, 3=neither disagree nor agree, 4=agree, 5=strongly agree).

Market Orientation. Market orientation was measured using Narver and Slater’s (1990). It is composed of 15 items and was assessed the three sub-factors: competitor orientation, customer orientation and interfunctional coordination.

Entrepreneurial Orientation. For measures of entrepreneurial orientation, items were based on 6-item scale developed by Khandwalla (1977) and used by Covin and Slevin (1989), Naman and Slevin (1993) and Hurley and his colleagues (2003). It consisted of 6-item and was assessed sub-factors of proactiveness and risk-taking.

Learning Orientation. Learning orientation was measured with a 9-item scale adapted from Choi (2004)’s measurement, based on Slater and Narver(1995), Calantone and his colleagues (2002) and Celuch and his colleagues (2002). It was assessed sub-factors of facilitated leadership, organic structural structure and decentralized strategic planning.

Organizational Structure. Formalization was measured using a modified version of Hage (1965) and Miller (1987) and consisted of 5-item. To measure decentralization, a modified version of 5-item was used, based on items developed by Hage and Aiken (1967).

Innovativeness. For measures of innovativeness, items were based on 5-item scale developed by Hurley and Hult (1998) and used by Hurley and his colleagues (2003).

Business Performance. Business performance is defined, in this study, as the achievement of organizational goals related to growth in sales, profitability, and markets share(Narver and Slater, 1990; Jaworski et al., 1993; Greenley, 1995). To measure business performance, 3-item was used.

RESULTS

Reliabilities and Factor Loadings

Table 1 reports the results of the factor analysis and reliabilities of 9 variables included in this study(see Table 1). A factor analysis yielded 9 factors with eigenvalues greater than one. Initially, Market orientation and learning orientation respectively were composed of 3 sub-factors; however, as a result of factor analysis, each construct was individually divided into 2 sub-factors. Except for one scale of competitor orientation and two scales of customer orientation, respectively, whose factor loadings were less than .50, the factor loadings of all items were generally good. Notably, the results also indicated that construct validity among variables existed distinctly when all variables were used in the factor analysis. And, all the reliabilities, with the exception of facilitate facilitated leadership, exceeded the 0.70 standard cited by Nunnally (1978) as being acceptable.

Descriptive Statistics and Correlations

Means, standard deviations, and correlations among measures are displayed in Table 2. Nearly all variables were significantly correlated, as can be seen in the table, but the correlation between formalization and business performance was relatively low (see Table 2).
Structural Equations Modeling and Hypothesis Tests

Goodness of Fit of the Model

Using the statistical technique of LISREL, covariance structural analyses were conducted to estimate the research model. LISREL produces both a statistical measure of goodness-of-fit and explained variance (R-square) of the model. Moreover, as the coefficients can be interpreted as standardized regression coefficients, a path analysis (decomposed into direct, indirect, and total effects) can also be undertaken (Alwin and Hauser, 1975). The measurement model had a Chi-square(2)=1175.18(df=479, p=0.00), the goodness-of-fit-index(GFI)=0.82, adjusted goodness-of-fit-index (AGFI)=0.80, root mean square residual(RMR)=0.058, and root mean square error of approximation(RMSEA)=0.066. Considering overall values of the indices, it is appropriate to estimate the structural model.

Hypothesis Tests

In order to test the hypotheses, we utilized the decomposition of effects results, in which total effect of an independent variable on a dependent variable is broken down into indirect and direct effects (e.g., Brown, 1997; Tabachnick and Fidell, 1996). A significant indirect effect indicates that a significant amount of the independent variable’s total effect on the dependent variable occurs through the mediator. Table 3 and 4 report the direct and indirect effects for all the paths hypothesized in the model (see Table 3 and 4).

From the results of direct effects, market orientation(Beta=0.45, t-value=5.38(p<0.05)) significantly affected learning orientation. Thus, hypothesis 1 was supported. However, entrepreneurial orientation did not significantly affect learning orientation, that is, hypothesis 2 did not supported. With regard to hypothesis 3 and 4 the findings also pointed out that learning orientation is positively related to innovativeness(Beta=0.65, t-value=5.23(p<0.05)) and innovativeness is positively related to business performance(Beta=0.33, t-value=4.91(p<0.05)). Such results supported hypothesis 3 and 4.

The primary objective of this research was to demonstrate whether learning orientation plays a mediating role in the relationship between its antecedents and innovativeness. With regard to hypothesis 5-1 to 5-2, all of the antecedents except for entrepreneurial orientation significantly affected innovativeness through learning orientation. More specifically, learning orientation played a full mediating role in the relationships among market orientation (indirect effect Beta=0.30, t-value=3.84(p<0.05), direct effect Beta=0.10, t-value=1.14(n.s.)), and innovativeness, respectively. From such findings, hypothesis 5-1 were supported. However, the indirect effect between entrepreneurial orientation and innovativeness was not significant (indirect effect=0.03, t-value=0.68(n.s.)); therefore, there was no support for the proposed mediation of this relationship by learning orientation.

Finally, to test hypothesis 6-1 and 6-2, this paper utilized SPSS 12.0. As a result (see table 5), such organizational structure as formalization and decentralization did not play a moderating role in the relationships between innovativeness and business performance; however, the direction of organizational structure is positive. It means that as future research will be designed, scholars need to steer the study about innovativeness, business performance, and organizational structure the positive direction. It means that innovativeness gives a positive effect on firms, when the firms have less formulated organizational structure. Thus, both hypothesis 6-1 and 6-2 was not support.

DISCUSSION AND CONCLUSIONS

Summary and Implications

The substantial aim of this paper is to investigate (1) the relationships among market orientation, entrepreneurial orientation, learning orientation, innovativeness and business performance and (2) a mediating role of learning orientation in their relationships. (3) a moderating role of organizational structure in the
relationships between innovativeness and business performance.

To empirically analyze the relationships of all variables, we constructed a structural equation model. Data for this study were collected from Inno-Biz and other venture companies in Korea. Inno-Biz (a compound of ‘Innovation’ and ‘Business’) companies are called technology-intensive SMEs in Korea.

From the results of direct effects and indirect effects, it was revealed that market orientation had a significant effect on learning orientation. However, entrepreneurial orientation (Beta = 0.05, t-value = 0.68(n.s.)) and formalization, Beta= -0.10, t-value= 1.78(n.s.), relatively, did not significantly affect learning orientation.

With respect to the relationship between entrepreneurial orientation and learning orientation, the hypothesis was not supported, but it needs considering its same direction. In this context, some studies support the relationship (Hurley and Hult, 1998; Van De Van, 1986; Trice and Beyer, 1991).

Other findings from the direct effects also pointed out that learning orientation is positively related to innovativeness. The result is strongly and empirically supported by many previous studies, as well as it was revealed that innovativeness significantly affects business performance (Goes and Park, 1997; Sinkula et al., 1997; Hurley and Hult, 1998; Baker and Sinkula, 1999, 2002; Calantone et al., 2002; Hurley et al., 2003).

With regard to a mediating role of learning orientation in the relationship between its antecedents and innovativeness, learning orientation fully mediated their relationships, except for the relationship of entrepreneurial orientation to innovativeness. However, the indirect effect between entrepreneurial orientation and innovativeness was not significant; therefore, there is no support for the proposed mediation of this relationship by learning orientation.

Finally, organizational structure did not moderate the relationship of innovativeness to business performance.

The significant contribution of this research is to construct a structural model to investigate the relationships among market orientation, entrepreneurial orientation, learning orientation, innovativeness and business performance, indicating limitation of much previous research which measures antecedents of learning orientation and innovativeness and impact on business performance. In addition, the study empirically tests a mediating role of learning orientation and a moderating role of organizational structure in their relationships. Thus, the findings provide a significant implication that firms should try to both augment their learning orientation and innovativeness and do not affect organizational structure in order to increase business performance.

By comparison with many scholars’ (Covin and Slevin, 1990; Schuler, 1990; Zahra, 1993; Zahra and Covin, 1995), this study attempted to distinguish innovation (one of the three constructs of entrepreneurship) from innovativeness and conducted a factor analysis. The results from the analysis pointed notably out that the two constructs exist distinctly with high discriminant validity. On the basis of such a significant finding, this study contributes to extension of research of both entrepreneurial orientation and innovativeness.
Limitations and Future Research

There are several limitations to this study. First, since we utilized a limited number of predictors and control variables in this study, future research should be needed to include other possible variables such as environmental factors suggested from previous studies (e.g., Hurley et al., 2003). Secondly, measurement for business performance remains limited to objective performance based on perception of respondents. Although many scholars (Narver and Slater, 1990; Jaworski et al., 1993; Greenley, 1995) has made use of objective performance, financial data need considering as another indicator for business performance.

Lastly, this study empirically tests a mediating role of learning orientation only in the relationships of all variables used in the study. Thus, it should need to be attempted to confirm a mediating role of innovativeness in a further well-constructed structural model.
<table>
<thead>
<tr>
<th>Items</th>
<th>Factor Loading</th>
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<tr>
<td></td>
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<tr>
<td>FOR1</td>
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<tr>
<td>FOR2</td>
<td>.837</td>
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<tr>
<td>FOR3</td>
<td>.854</td>
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<td>FOR4</td>
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<tr>
<td>IN13N</td>
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<td>IN14N</td>
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<tr>
<td>IN15N</td>
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<tr>
<td>MO5</td>
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<td>MO6</td>
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<td>DEC1</td>
<td>.079</td>
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<tr>
<td>DEC2</td>
<td>.327</td>
</tr>
<tr>
<td>DEC3</td>
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</tr>
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<td>DEC4</td>
<td>.050</td>
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<tr>
<td>DEC5</td>
<td>.080</td>
</tr>
<tr>
<td>LO4</td>
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<tr>
<td>LO5</td>
<td>.029</td>
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<tr>
<td>LO6</td>
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<tr>
<td>EO1</td>
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<td>EO2</td>
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<td>EO3</td>
<td>.159</td>
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<tr>
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<tr>
<td>EO5</td>
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<tr>
<td>EO6</td>
<td>.135</td>
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<tr>
<td>MO1</td>
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</tr>
<tr>
<td>MO2</td>
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</tr>
<tr>
<td>MO3</td>
<td>.153</td>
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<tr>
<td>LO1</td>
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<td>LO2</td>
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<td>LO3</td>
<td>.161</td>
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<tr>
<td>Eigen-value</td>
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<td>Cronbach's</td>
<td>.882</td>
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Note: only factor loadings above .50 are shown.

N=1,145
Table 2: Descriptive Statistics and Correlations

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<th>Variable</th>
<th>Mean</th>
<th>S.D</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<td>1. Innovativeness</td>
<td>4.09</td>
<td>.7045</td>
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<td>2. Learning Orientation</td>
<td>3.83</td>
<td>.6355</td>
<td>.672**</td>
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<td></td>
<td></td>
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<tr>
<td>3. Market Orientation</td>
<td>3.97</td>
<td>.6061</td>
<td>.567**</td>
<td>.621**</td>
<td>1</td>
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<tr>
<td>4. Entrepreneurial Orientation</td>
<td>3.79</td>
<td>.6136</td>
<td>.508**</td>
<td>.474**</td>
<td>.512**</td>
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<td></td>
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<tr>
<td>5. Formalization</td>
<td>3.72</td>
<td>.8128</td>
<td>.268**</td>
<td>.282**</td>
<td>.399**</td>
<td>.348**</td>
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<tr>
<td>6. Decentralization</td>
<td>3.68</td>
<td>.7074</td>
<td>.483**</td>
<td>.568**</td>
<td>.462**</td>
<td>.455**</td>
<td>.295**</td>
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<tr>
<td>7. Business Performance</td>
<td>3.74</td>
<td>.8061</td>
<td>.275**</td>
<td>.320**</td>
<td>.412**</td>
<td>.417**</td>
<td>.151**</td>
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Note: ** p < 0.01, * p < 0.05

Table 3: Parameter Estimates for the Path: Direct Effects

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<tr>
<th>Path</th>
<th>Beta</th>
<th>t-value</th>
</tr>
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<tbody>
<tr>
<td>Market Orientation → Learning Orientation</td>
<td>0.45</td>
<td>5.38*</td>
</tr>
<tr>
<td>Entrepreneurial Orientation → Learning Orientation</td>
<td>0.05</td>
<td>0.68</td>
</tr>
<tr>
<td>Market Orientation → Innovativeness</td>
<td>0.10</td>
<td>1.14</td>
</tr>
<tr>
<td>Entrepreneurial Orientation → Innovativeness</td>
<td>0.23</td>
<td>2.97*</td>
</tr>
<tr>
<td>Learning Orientation → Innovativeness</td>
<td>0.65</td>
<td>5.23*</td>
</tr>
<tr>
<td>Innovativeness → Business Performance</td>
<td>0.33</td>
<td>4.91*</td>
</tr>
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</table>

Note: * p < 0.05
### Table 4: Parameter Estimates for the Path: Indirect Effects

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<tr>
<th>Path</th>
<th>Beta</th>
<th>t-value</th>
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</thead>
<tbody>
<tr>
<td>Market → Orientation → Learning Orientation → Innovativeness</td>
<td>0.30</td>
<td>3.84*</td>
</tr>
<tr>
<td>Entrepreneurial → Orientation → Learning Orientation → Innovativeness</td>
<td>0.03</td>
<td>0.68</td>
</tr>
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</table>

Note: * p < 0.05

### Table 5: Moderated regression analysis

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<th>Standardized Coefficients</th>
<th>t</th>
<th>P</th>
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<tr>
<td></td>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>(Constants)</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LO</td>
<td>-.003</td>
<td>-.022</td>
<td>-.016</td>
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<tr>
<td>MO</td>
<td>.229</td>
<td>.288</td>
<td>.295</td>
</tr>
<tr>
<td>EO</td>
<td>.350</td>
<td>.357</td>
<td>.357</td>
</tr>
<tr>
<td>INN</td>
<td>.006</td>
<td>.006</td>
<td>-.231</td>
</tr>
<tr>
<td>FOR</td>
<td>.145</td>
<td>-.477</td>
<td></td>
</tr>
<tr>
<td>DEC</td>
<td>.030</td>
<td>-.195</td>
<td></td>
</tr>
<tr>
<td>INN * FOR</td>
<td>.438</td>
<td></td>
<td></td>
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<tr>
<td>INN * DEC</td>
<td>.356</td>
<td></td>
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REFERENCES


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