THE IMPACT OF INNOVATION ORIENTATION ON ORGANIZATIONAL INNOVATION PERFORMANCE: A STUDY ON THE MEDIATING EFFECT OF DUAL INNOVATION STRATEGIES IN SHENZHEN H GROUP

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Abstract: This study aims to explore the relationship between innovation orientation, ambidextrous innovation, and innovation performance and assess the impact of demographic traits on these relationships. Using a survey-based research approach, we utilized data from employees of H High-Tech Group in Shenzhen to construct linear regression models and structural equation models to gain insights into the interactions among these variables. The results indicate that the company's workforce is predominantly young, with a relatively balanced gender distribution and a lower proportion of highly educated individuals. Descriptive statistical analysis reveals that employees generally hold a positive attitude towards innovation, reflecting widespread recognition and support for innovation within the company. Confirmatory factor analysis underscores the high structural validity of the scales, providing a reliable measurement foundation for subsequent analyses. Inferential statistical analysis indicates that educational background significantly influences exploitative and exploratory innovation, while age significantly affects innovation performance. Structural equation modeling further reveals the mediating role of exploitative and exploratory innovation in forming innovation performance. Although the direct impact of innovation orientation on innovation performance is insignificant, its indirect impact through ambidextrous innovation is substantial. Regarding practical implications, companies should prioritize cultivating innovation orientation and encourage employee participation in innovation activities by providing resources and support. Additionally, companies should recognize the influence of different demographic traits on innovation activities and take measures to attract and cultivate highly educated talents to enhance innovation capability and performance.

Keywords: Innovation Orientation, Dual Innovation, Exploitative Innovation, Exploratory Innovation, Innovation Performance

Introduction

In the global competitive environment of the 21st century, technological prowess has become a critical factor in inter-country competition, directly impacting national strength and the well-being of

its people. Since Deng Xiaoping proposed that 'science and technology are the primary productive forces,' China has consistently prioritized technological development as a strategic focus. As we entered the 21st century, the 18th National Congress of the Communist Party of China further emphasized the importance of innovation, identifying it as the primary driving force for economic development and advocating for practical, theoretical, and institutional innovation, implementing an innovation-driven development strategy. For high-tech enterprises such as Shenzhen H High-Tech Enterprise, innovation is crucial for sustaining operations, solidifying market share, and tapping into emerging markets. Faced with economic globalization and market internationalization challenges, innovation has become the decisive factor for enterprises to build core competitiveness and enhance national comprehensive strength. American economist Joseph Schumpeter believed that innovation strengthens competitive advantages, promotes the transformation of economic development models, and profoundly affects economic structures.

Enterprise innovation requires establishing clear innovation orientations and fostering conducive innovation atmospheres. Shenzhen H High-Tech Enterprise utilizes exploratory and exploitative innovations to meet customer needs, acquire new knowledge through existing technologies, and improve existing products. Although studies have explored the relationship between innovation orientation and performance, there is still debate, and no unified conclusion has been reached. This study aims to construct an analytical framework to investigate the structural Relationship between innovation orientation, dual innovation, and innovation performance in high-tech enterprises. It uses Shenzhen H High-Tech Enterprise as a case study to analyze its specific practices and achievements, providing insights and guidance for other enterprises.

Research Objective (s)

This study aims to achieve the following seven specific objectives:

1. Investigate the perception of innovation orientation among Shenzhen H High-Tech Enterprise employees.

2. Examine the overall perception of dual innovation among Shenzhen H High-Tech Enterprise employees.

3. Explore the overall perception of innovation performance among Shenzhen H High-Tech Enterprise employees.

4. Investigate the influence of different individual characteristic variables (such as gender, education level, and position) on the innovation orientation of employees at Shenzhen H High-Tech Enterprise.

5. Analyze the influence of different individual characteristic variables (such as gender, education level, and position) on the dual innovation of employees at Shenzhen H High-Tech

Enterprise.

6. Assess the Impact of different individual characteristic variables (such as gender, education level, and position) on the innovation performance of employees at Shenzhen H High-Tech Enterprise.

7. Explore the relationships among innovation orientation, dual innovation, and innovation performance among Shenzhen H High-Tech Enterprise employees.

Literature Review

In the literature review section, representative studies from recent years play a crucial role in demonstrating the latest developments and trends in the field. Here is an extraction and summary of literature from recent years:

Innovation Orientation

As the core of corporate strategy, innovation orientation reflects a company's attitude and efforts toward innovation activities. Amabile (1997) proposed that innovation orientation is the cultural foundation supporting innovation and risk-taking, while Siguaw et al. (2006) described it as a multidimensional knowledge structure. Hurley & Hult (1998) defined innovation orientation from the corporate culture perspective, considering it a key driver of corporate innovation. Recently, Schumpeter (2018) expanded the concept of innovation orientation to include service and process innovation, emphasizing their comprehensive impact on corporate performance.

Dual Innovation

Dual innovation involves exploratory and exploitative innovation, significantly impacting corporate innovation performance. Benner & Tushman (2003) distinguished between these two types of innovation, while He & Wong (2004) proposed that enterprises should engage in both types of innovation activities simultaneously. Lavie (2010) emphasized exploitative and exploratory innovation's different goals and processes. Recently, Smith et al. (2016) studied the application of dual innovation in various industries. Gibson & Birkinshaw (2018) suggested that enterprises should balance these two types of innovation through organizational structure and culture.

Innovation Performance

Innovation performance is a crucial indicator for measuring the effectiveness of innovation activities. Eisenberger (2001) proposed that job performance should include employees' innovative behavior. Janssen (2000) viewed innovation performance as a collection of innovation processes. Damanpour & Schneider (2009) provided essential perspectives on understanding the multidimensionality of innovation performance through meta-analysis. Chen et al. (2020) discussed how digital transformation influences innovation performance.

Theoretical Foundations

The theoretical foundations relied upon in this study include resource-based theory,

organizational learning theory, and innovation management theory. Resource-based theory, such as the works of Penrose (1959), Wernerfelt (1984), Rumelt (1982), and Barney (1991), emphasizes how companies gain competitive advantages through unique resources and capabilities. Organizational learning theory, exemplified by Cyert and March (1963) and Argyris and Schon (1978), underscores the importance of organizational learning in enhancing innovation performance. Innovation management theory posits that innovation is a comprehensive process involving strategic planning, resource allocation, organizational culture, and market responsiveness. Sirmon et al. (2011) extended resource-based theory, discussing the heterogeneity and dependence of resources. Crossan et al. (2013) proposed a process model of organizational learning, highlighting the importance of reflection and learning cycles.

Related Research of Western and Chinese Scholars

Western scholars initiated earlier research in innovation orientation, dual innovation, and performance, forming relatively mature theoretical frameworks. Chinese scholars have conducted research that integrates the practical situations of local enterprises, providing interpretations and studies with Chinese characteristics. For instance, studies by Peng, Z., & He, P. (2015), and Wang, Y. (2005). emphasize the core position of innovation orientation in corporate strategy and explore the relationship between dual innovation and corporate performance. Wang & Li (2018) studied how Chinese enterprises achieve rapid growth through innovation orientation. Kang et al. (2021) explored the application of dual innovation in different cultural backgrounds.

By integrating these new literature findings, this study constructs a theoretical framework to explore and validate the complex relationships among innovation orientation, dual innovation, and innovation performance, thereby providing valuable insights for enterprise management practice.

Conceptual Framework

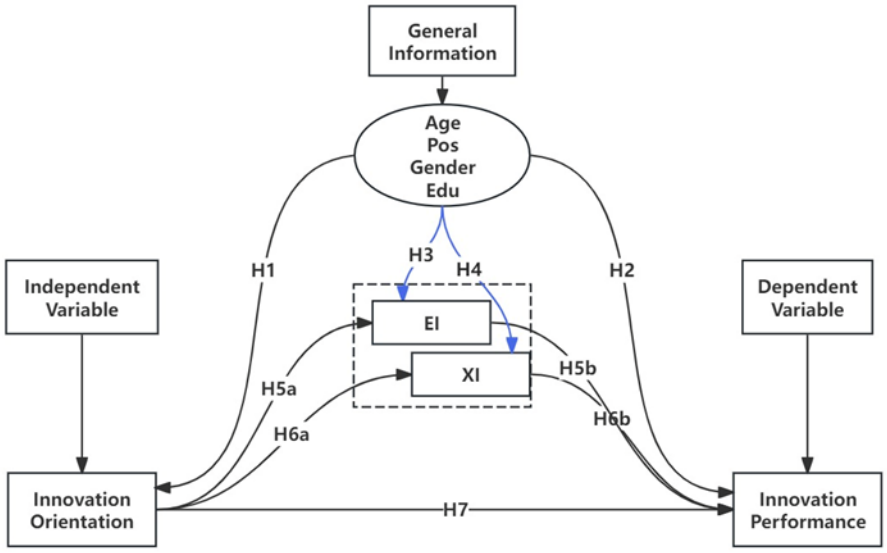
The conceptual framework (Pic. 1) provides a clear theoretical framework for this study, guiding our exploration and validation of the complex relationships among innovation orientation, dual innovation, and innovation performance. Through this framework, this study aims to provide valuable insights for enterprise management practices, helping companies design and implement innovation strategies more effectively.

Methodology

Research Design

This study employs a survey research method to construct a linear regression model to analyze the relationship between innovation orientation and organizational innovation performance among employees of the H High-Tech Group in Shenzhen. Confirmatory factor analysis (CFA) was initially used to validate the measurement model fit of four constructs: innovation orientation, exploitative

innovation, exploratory innovation, and innovation performance. The results of CFA supported a significant positive correlation between innovation orientation and innovation performance, revealing the mediating role of dual innovation.



Picture 1: Conceptual Framework

Scale Design

Innovation Orientation Scale: Adapted from Wu, X., & Zhang, F. (2014) research, consisting of 3 items scored on a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree.'

Innovation Performance Scale: Adapted from Qian, X., Yang, Y., & Xu, W. (2010). research, consisting of 5 items also scored on a 5-point Likert scale.

Dual Innovation Scale: Divided into exploitative and exploratory innovation, comprising eight items in total. The scale for exploitative innovation is adapted from Jansen, Van Den Bosch, and Volberda's (2006) research, consisting of 4 items, while the scale for exploratory innovation is also adapted from the same study, also composed of 4 items.

Samples

This study utilized cluster sampling to sample Shenzhen's H High-Tech Group employees. According to Taro Yamane's sample size table, with a 95% confidence level and a 5% sampling error, the minimum required sample size was calculated to be 400. To enhance the accuracy of the research results and the generalizability of the conclusions, a total of 871 questionnaires were distributed and collected. After excluding invalid questionnaires, 859 valid questionnaires were obtained, yielding an effective response rate of 98.62%.

Data Analysis

Data analysis employed methods including frequency analysis, independent samples t-test, one-way ANOVA, one-sample t-test, two-tailed test, factor analysis, and linear regression analysis to

comprehensively evaluate the relationships between individual characteristic variables and innovation orientation, dual innovation, and innovation performance.

Reliability and Validity Analysis of Scales

Reliability Analysis: Cronbach's α coefficient was used to assess Reliability, with results indicating high internal consistency for the innovation orientation scale (α = 0.962), exploitative innovation (α = 0.980), exploratory innovation (α = 0.948), and innovation performance (α = 0.977), all exceeding 0.8.

Validity Analysis: Construct validity was assessed through exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Results of CFA showed high factor loadings for all variables, such as innovation orientation ranging from 0.915 to 0.969, exploitative innovation from 0.941 to 0.976, exploratory innovation from 0.877 to 0.939, and innovation performance from 0.944 to 0.961, indicating good structural validity of the scales.

Through detailed methodological design and implementation, the study concluded that innovation orientation positively influences organizational innovation performance, elucidating the mediating role of dual innovation in this process. This provides empirical evidence for companies formulating innovation strategies and enhancing innovation management. Additionally, the study offers methodological references for future research on the Relationship between innovation orientation and innovation performance in different cultural and organizational contexts.

Results

Demographic Characteristics Statistics

Regarding gender distribution, male employees account for 54%, while female employees account for 46%, indicating a relatively balanced gender distribution among company employees. Regarding age distribution, 74% of employees are 30 or younger, suggesting a dynamic and youthful workforce. Regarding educational background, 87% of employees hold a bachelor's degree or below. In comparison, 13% have a master's degree or above, reflecting the current demand for talent with different educational backgrounds and the company's attractiveness. In terms of hierarchical position, 83% of employees are ordinary staff, while 17% are in management positions, indicating a relatively flat management structure within the company.

Descriptive Statistics Results

Descriptive statistics provide a preliminary understanding of the dataset characteristics. The mean values close to 1.5 indicate that employees respond positively to questionnaire items. The low standard deviation suggests relatively consistent views among employees on various questionnaire items. The skewness and kurtosis values close to 0 confirm the data distribution's symmetry and the kurtosis's similarity to normal distribution.

Dimension Analysis Results

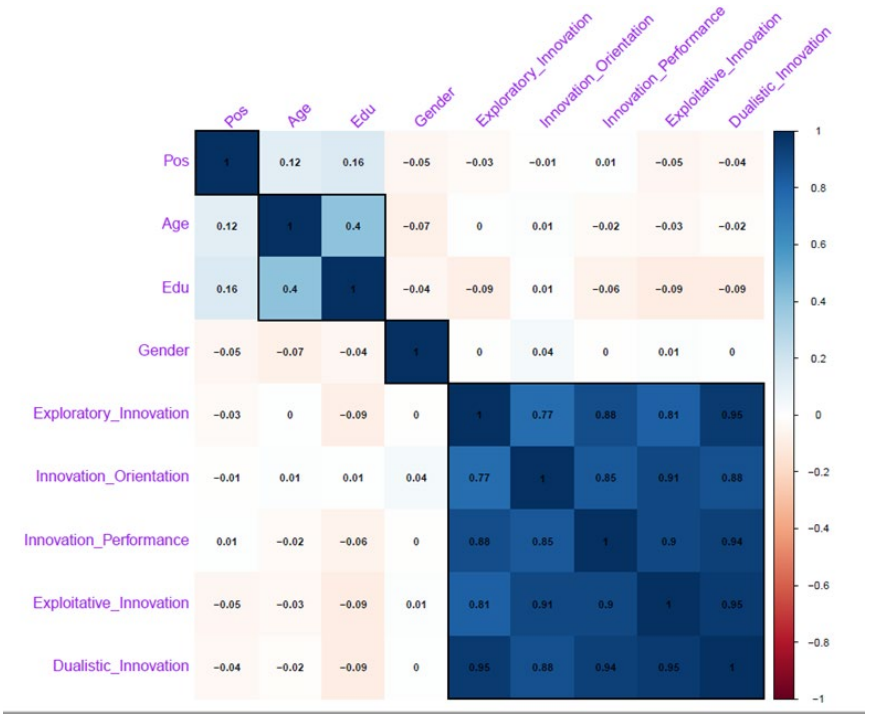
Dimension analysis of the questionnaire survey reveals four key dimensions: innovation orientation, exploitative innovation, exploratory innovation, and innovation performance. These dimensions form the basis for assessing employees' perception of company innovation activities and the performance of company innovation, providing a structured framework for subsequent statistical analysis.

Confirmatory Factor Analysis (CFA) Results

The results of CFA show that all variable loadings are above 0.8, with innovation orientation ranging from 0.879 to 0.937, exploitative innovation from 0.934 to 0.939, exploratory innovation from 0.866 to 0.901, and innovation performance from 0.887 to 0.928. These high loading values indicate the high structural validity of the scales measuring the corresponding constructs.

Correlation Coefficient Results

The correlation coefficient table reveals the Correlation between different variables. For example, the correlation coefficient between innovation orientation and innovation performance is 0.041, between exploitative innovation and innovation performance is 0.908, and between exploratory innovation and innovation performance is 0.766. These significant correlation coefficients provide a basis for subsequent hypothesis testing.



Picture 2: Correlation Heatmap

Inferential Statistics Results

The results of one-way T-tests and one-way ANOVA tests indicate that education significantly

influences specific innovation-related dimensions among individual characteristics. Specifically, education significantly affects exploitative innovation (P=0.0266) and exploratory innovation (P=0.0362), while age significantly affects innovation performance (P=0.05). Other individual characteristics do not significantly affect innovation orientation, exploitative innovation, exploratory innovation, and innovation performance.

Structural Equation Modeling (SEM) Results

The results of SEM provide quantitative estimates of the relationships between variables. In the model, both exploitative innovation (path coefficient a=0.586, P<0.001) and exploratory innovation (path coefficient b=0.478, P<0.001) significantly positively influence innovation performance. However, the direct impact of innovation orientation on innovation performance (path coefficient c1=-0.113, P=0.188) is not statistically significant.

Table 1: SEM Result

Lhs	Op	Rhs	Label	Est	Se	Z	P-Value	Ci. Lower	Ci. Upper
IP	~	IO	c1	-0.113	0.086	-1.32	0.188	-0.281	0.055
IP	~	EI	a	0.586	0.075	7.80	0.000	0.439	0.733
IP	~	XI	b	0.478	0.028	17.26	0.000	0.424	0.533
EI	~	IO	c	1.009	0.025	39.69	0.000	0.960	1.059
XI	~	IO	d	0.883	0.032	27.80	0.000	0.821	0.945

Discussion

Based on the research results outlined above, the following detailed discussions are provided:

1). The demographic characteristics statistics of this study indicate that most enterprise employees are young, which may bring fresh perspectives and innovative thinking to the company. However, the relatively low proportion of highly educated employees may limit the company's innovation capability in areas requiring deep expertise. Additionally, the flattened management structure may facilitate quick decision-making and innovation implementation but may also need more coordination and communication to ensure collaboration across different levels.

2). Descriptive statistical analysis shows that employees generally respond positively to innovation-related questionnaire items, reflecting widespread recognition and support for innovation within the company. The low standard deviation indicates relatively consistent views among employees on the questionnaire items, suggesting a shared understanding and values regarding innovation within the company culture.

3). Dimension analysis and CFA results emphasize the high structural validity of the scales, providing a solid measurement foundation for the study. The high loading values of the scales indicate reliable measurement of innovation orientation, exploitative innovation, exploratory innovation, and innovation performance.

4). Correlation analysis reveals a weak correlation between innovation orientation and performance, suggesting that factors other than innovation orientation may influence innovation performance. The strong correlation between exploitative innovation, exploratory innovation, and innovation performance further confirms the crucial role of ambidextrous innovation in driving innovation performance.

5). The results of inferential statistical analysis indicate that education is a critical individual characteristic influencing exploitative and exploratory innovation, likely associated with the advantages of highly educated employees in knowledge acquisition, information processing, and innovative thinking. The significant impact of age on innovation performance may be related to the adaptability of young employees to new technologies and markets.

6). SEM analysis highlights the mediating role of exploitative and exploratory innovation in forming innovation performance. Although the direct impact of innovation orientation on innovation performance is not significant, its indirect impact through ambidextrous innovation on innovation performance is substantial. This suggests companies should focus on improving and exploring new technologies when promoting innovation performance.

In summary, the results of this study emphasize the critical role of ambidextrous innovation in enhancing innovation performance. Companies should encourage employees to engage in exploitative and exploratory innovation activities and provide necessary resources and support. Additionally, companies should prioritize cultivating and attracting highly educated talents to enhance innovation capability and performance. Finally, companies should recognize that while innovation orientation may not directly and significantly impact innovation performance statistically, strengthening innovation culture and organizational support can indirectly promote improvement in innovation performance. These discussions can provide insights for managers on how to enhance organizational performance through innovation activities and guide future research, particularly in exploring how different demographic characteristics interact with innovation activities.

Conclusions

Based on the analysis above, the research findings can be summarized as follows:

1). Relationship between demographic characteristics and innovation activities: The youthful age structure of employees suggests a vibrant team, potentially positively impacting innovation activities. However, the lower proportion of highly educated employees may limit innovation potential in certain specialized areas. The flattened management structure may facilitate rapid innovation implementation but requires more effective cross-level communication.

2). Employee attitudes towards innovation: Descriptive statistical analysis indicates widespread positive responses to innovation-related questionnaire items, reflecting widespread recognition and

support for innovation within the company.

3). Reliability and validity of the scales: Through Confirmatory Factor Analysis (CFA), the study confirms the high structural validity of the scales in measuring innovation orientation, exploitative innovation, exploratory innovation, and innovation performance.

4). Correlation between innovation orientation and performance: Although the direct Correlation between innovation orientation and innovation performance is insignificant, its impact on ambidextrous innovation cannot be ignored.

5). The mediating role of ambidextrous innovation: Both exploitative and exploratory innovation significantly influence innovation performance, highlighting the crucial mediating role of ambidextrous innovation in driving innovation performance.

6). Impact of individual characteristics: Educational background significantly influences exploitative and exploratory innovation, while gender, age, and position do not. This suggests that knowledge level and learning ability represented by education are essential factors that influence innovation activities.

7). Indirect effects of innovation orientation: While the direct impact of innovation orientation on innovation performance is not significant, its indirect impact through ambidextrous innovation is substantial, emphasizing the potential value of innovation culture in enterprise innovation performance.

Practical implications: Enterprises should prioritize cultivating innovation orientation and encourage employees to engage in exploitative and exploratory innovation activities by providing resources and support. Additionally, companies should recognize the impact of individual characteristics on innovation activities and take measures to attract and cultivate highly educated talents to enhance innovation capability and performance.

Research limitations and future directions: Although the study provides an in-depth understanding of the Relationship between innovation orientation, ambidextrous innovation, and innovation performance, limitations such as sample representativeness exist. Future research can explore differences in these relationships across different types of enterprises and cultural backgrounds and how innovation orientation influences innovation performance through different organizational mechanisms. These conclusions provide theoretical and practical guidance for how enterprises can enhance innovation performance by improving employees' innovation orientation and serve as a methodological reference for future research on the Relationship between innovation orientation and innovation performance in different cultural and organizational contexts.

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