A Study on the Effect of Manager's Competency and Leadership Characteristics of Small and Medium Venture Firms on Innovation Activities and Performance

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<Abstract>

[Purpose]

This study investigates the relationship between manager's competency characteristics and innovation activities, the relationship between leadership characteristics and innovation activities in small and medium venture firms, and the mediating effect of management innovation activities on the performance improvement of each factor.

[Design/Methodology]

The research model is based on the theoretical algorithm of previous studies. A survey is conducted on small and medium-sized venture firms that have an account with K-Bank in Korea. I conduct an exploratory factor analysis, a reliability analysis and a correlation analysis. In addition, a three-step mediation regression analysis of Baron and Kenny(1986) was conducted to verify the mediating effect of management innovation activities.

[Findings]

I find that the creative competency and managerial competency of managers affect innovation activities in small and medium venture firms. The results suggest that intellectual stimulation and individual consideration also affect innovation activities in small and medium venture firms. In addition, the empirical results confirm the effectiveness of management innovation activities to maximize the management performance of small and medium venture firms.

[Research implications]

This study contributes to the literature by providing empirical evidence that the detailed sub-components of individual competency characteristics and leadership characteristics of the managers affect innovation activities in small and medium venture firm. The mechanism for improving the management performance of innovation activities presented in this study may have implications for the stakeholders of small and medium venture firms.

<Key Words> Competency Characteristics, Leadership Characteristics, Management Innovation Activities, Management Performance.

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Ⅰ. Introduction

In an unpredictable market economy system, change is always forced to innovate for survival. Recently, the economic situation in Korea is rapidly changing due to the internal and external situation such as Corona-19 pandemic, soaring inflation, higher interest rates and a weakening currency, polarization of political inclination in Korea, energy crisis caused by the Russian- Ukrainian war, supply chain crisis of raw materials, and the hegemony battle between the United States and China.

Small and medium-sized venture companies tend to rely on the ability of CEOs unlike large corporations in decision-making within the organization. In terms of the organizational structure and management environment of small and medium venture companies, the competency and qualities of managers are important variables for improving management performance. What competency characteristics and leadership characteristics can contribute to improving management performance of the company is a significant issue directly related to the survival of the organization. Management innovation refers to a series of deliberate and planned programs that respond to environmental changes. In order to achieve this, it is said that the specific activities of various changes and improvement attempts newly promoted in each field in the organization are management innovation activities.

This study analyzed the effects of competency characteristics and leadership characteristics of small and medium venture business managers on management innovation activities, conducted a relationship analysis between management innovation activities and management performance, and presented what competencies are required for the management of small and medium venture business. In addition, the mediating effect of management innovation activities between individual characteristics (competency characteristics and leadership characteristics) and management performance of small and medium venture business managers is analyzed to suggest ways to improve management performance of small and medium venture companies for sustainable growth. In other words, the study aims to clarify the mechanism of operation of management innovation activities through catalysts for improving management performance between individual characteristics and management performance of small and medium venture business managers.

For this research purpose, the research model was designed based on the algorithm of the previous studies, and the exploratory factor analysis, reliability analysis, correlation analysis, and three-step mediation regression analysis were performed using IBM SPSS 22 of the statistical analysis program.

Ⅱ. Theoretical Background, Preceding Research and Hypothesis Setting

1. Theoretical Background and Preceding Research

1) Competency Characteristics

Competency is knowledge, function, value, and attitude that have a crucial impact on the fulfillment of a specific role, and it is the ability that an individual needs to achieve desirable performance or goal. Boyatzis(1982) argues that competency is an inherent characteristic of an individual, such as motivation, trait, skill, self-image and social role, and knowledge. In addition, Baum et al.(2001) defined personal characteristics such as knowledge, skills, and abilities required to perform specific duties. In this way, competency is an individual's internal characteristic that can be effectively and excellently performed in a specific situation or job(Spencer and McClelland, 1994). Especially, the entrepreneurial competency of technology start-up companies focuses on factors such as entrepreneurial ability, management ability, past management ability and network, as social background characteristics(Chandler and Hanks, 1994).

In the study of small and medium venture companies, the competency of managers is regarded as the most influential factor in the operation of the company and is the subject of continuous research. Smith and Grimm(1987) classify the research on the competency characteristics of managers into the following four categories. First, it is a study on the characteristics of managers such as age, education, and experience. Second, it is a study on achievement motivation, risk taking, and sustainability, which are personality characteristics. Third, the experience of related companies and the experience of establishing a company are the characteristics of experience. Fourth, it's research on ability characteristics and leaders.

Small and medium venture companies in the early stage do not have an organization accurately, so there is a limit to creating performance based on the capabilities of the organization. The competence of managers is measured variously according to the researcher, but in common, technical competence, strategic thinking competence, and organizational competence are very important(Andreou et al., 2017).

The competency characteristics of managers have a positive effect on management

performance, and include communication, decision making, and management(Baum, 1994). Considering that the personal characteristics of small and medium venture business managers and their role as managers have a decisive effect on the performance creation of companies, the competency characteristics of managers such as managerial competency, technical competency, and creative competency are worth being treated as the most important management resources.

This study aims to classify managerial competency, technical competency, and creative competency based on the previous studies of Smith and Grimm(1987).

(1) Managerial Competency

The managerial competency of small and medium venture companies is the ability to recognize opportunities, result-oriented motivations, and political competence (Balzarova et al., 2007). Demerjian et al.(2012) said that the more internal communication systems and processes of the company are equipped, the more positive the management performance of small and medium venture companies. Also, it reported that the managerial competency of the company affects management and technical differentiation, differentiation strategy of marketing strategy and management performance. As such, it is important to re-establish the competency factors and organizational competence as a means of overcoming the crisis of small and medium venture companies. It is very important to segment, institutionalize and specialize the problem solving ability of the entire organization based on the efforts of the individual manager and the ability of the individual manager.

In addition, the capability characteristics such as management ability and technical expertise have a very strong influence on behavioral performance, so it can be seen that management ability among the capabilities of managers is a very important variable for employee morale and satisfaction(Chandler and Jansen, 1992; Baum, 1994).

(2) Technical Competency

Managers who have a tendency to prefer risk and have a leading position in technology are more active in innovation activities such as R&D investment in order to launch next-generation products than those who do not have a relatively low position. Baum(1994) divided the technical competencies of managers into general and special capabilities, and included organizational and command technologies in general capabilities, and special capabilities included industrial and technical technologies.

In the case of small and medium venture companies, it is strategic intention to commercialize high-tech technology in its nature, and considering the characteristics of small and medium venture companies that are active in R&D activities, it can be

regarded as a very important factor in the survival and performance creation of small and medium venture companies. R&D capacity can be defined as the most important condition that guarantees the differentiation and sustainability of companies due to product development and new market development. This is because it is a capability to strengthen the ability of the company to secure and maintain the competitive advantage of the company.

Especially, in recent technological situations where the speed of development is accelerated and the active integration and convergence of technologies are achieved, the diverse and rapid understanding of technology trends is being emphasized.

Although the managers of small and medium venture companies lack specific knowledge of technology, they need to understand the nature of technology, roadmap of technology, development path of technology, and development process of technology in the future.

(3) Creative Competency

It is true that the definition of creativity differs from scholar to scholar, and creativity is becoming more and more established as the concept of deriving new and useful ideas(Amabile, 1996). There is also a claim that creativity itself should be viewed as a new problem solving ability of an individual, that is, a creativity that integrates new thinking and flexibility, rather than focusing on processes and results (Lee and Kim, 2008). It has been argued that creativity should be a key look at new and useful processes before outcomes are produced, suggesting that creativity should be focused on the process of drawing new ideas rather than judging them as results themselves.

The creativity of managers is an important corporate asset for small and medium venture companies that try to transform and reconstruct existing ideas and products to open new markets. According to the studies on creativity, human creative activities are deeply related to corporate innovation activities. Innovation is creating new things that do not exist in the market. This is creative activity. Creative management is a management method consisting of the concepts of diversity, autonomy, connectivity, flexibility, and ambivalence.

Individual creative competency has an important influence on the degree of individual motivation and personality. And, the environment surrounding the individual is also known to have a very meaningful influence. The willingness to take risks can be a factor in the manager's aggressive presentation of his new ideas.

2) Leadership Characteristics

Leadership trait theory is basically focused on personal characteristics and aims to distinguish what the characteristics of leaders are. According to the results of the study, intelligence, personality, task-related characteristics, and social characteristics are found to be effective leader characteristics. Although the importance of leadership in organizational management can be interpreted differently due to various and timely factors such as approach and perspective on leadership research, the role of leadership in stable operation and development of organization and achievement of organization goals is emphasized(Fiedler, 1989).

Leadership can be understood as the ability to induce organizational members to voluntarily participate in group activities to achieve their goals or internal structure, and it can be said that the skills or processes that voluntarily strive to achieve the goals of the organization or group and influence them(Yukl, 2002). Fiedler(1967) defined leadership as the ability to influence the success or failure of the organization and motivate the organization members, and Hersey and Blanchard(1993) defined leadership as the process that affects the activities of individuals or groups to achieve goals in a certain situation.

The modern leadership theory is more focused on transactional or transformational leadership proposed by Bass(1985), so this study aims to select two types of leadership characteristics as research topics.

(1) Transactional Leadership

Although transactional leadership has adopted a traditional approach to leadership research compared to transformational leadership, transactional leadership can be evaluated as a leadership theory that explains the leadership's competence required in the era of change and innovation compared to trait theory, behavior theory, and situation theory as the classical leadership theory(Lee, 2006).

The general premise of transactional leadership is that leaders find effective ways to use to achieve the obedience and cooperation of organizational members(Lee, 2010; Lee, 2006; Yukl, 2002). Therefore, transactional leadership can be understood as a contractual transaction relationship between leaders and organizational members to improve leadership performance(Howell and Higgins, 1990; Kuhnert, 1994).

In other words, transactional leadership can be said to be created when the leader exchanges and transactions naturally occur between the leader and the organization member in the process of causing the desirable behavior of the subordinate by utilizing the behavior, compensation, and incentives. Through such a transaction or exchange process, the members of the organization are motivated to compensate and ultimately emphasize that they can improve organizational performance and job activities. Bass(1985) embodied the sub-constructive concept of transactional leadership as

contingent reward and management by exception.

Contingent reward can be interpreted as 'compensation according to the achievements', and it can be understood as an active concept that provides incentives and compensation according to the level defined by the leader as the successful performance of the organization members. In this case, if the performance is achieved on the premise of the exchange relationship based on the desire of the organization members and the compensation of the organization, it can be seen as a positive reinforcement of compensation, and a leader's approach to providing negative reinforcement of punishment if the performance is not achieved(Lee, 2010; Yukl, 2002). In other words, contingent reward can be understood as an exchange process in which the compensation standards of the leader and the efforts and achievements of the organization members are exchanged(Shin, 2009), and such exchange relations have limitations in that they exist only until the leaders and the organization members satisfy each other's standards(Jang, 2009). Therefore, the leader who emphasizes contingent reward stresses the establishment of rational performance measurement indicators and efficient work process rather than focusing attention on the effectiveness of work performance. This means that the leadership has a relatively large number of rights and conditions, and thus the effect of transactional leadership is maximized when the members of the organization depend on the leader relatively more. Also, when a feasible target value is presented, the effect is enhanced.

The management by exception can be defined as the behavior of the leader who intervenes in the achievement of the organizational member in exceptional cases where the leader is judged to have difficulty in achieving the performance expected by the organizational member(Cho, 2011). According to the exception management, punishment should be followed by the low performers due to lack of effort, and a strategy to improve the performance through education and training or alternative personnel is necessary for the low performers due to lack of ability. This approach is criticized that leaders can fundamentally focus more attention on monitoring the low performance of organizational members or deviated organizational behavior, and ultimately lead to the fact that they can bind the performance of organizational members to low standards(Seo and Yoon, 2003; Lee, 2010).

(2) Transformational Leadership

Transformational leadership has the characteristic of changing the behavior and performance of the organization members by encouraging the development of the organization members and suggesting the efforts and beliefs about the development of the organization and the members in order to survive the fierce competition for survival

due to rapid environmental changes. In addition, it is a new leadership paradigm that focuses on stimulating the upper desires to promote the goals of the group beyond the interests of the organizational members themselves(Kim, 2011; Shin, 2009; Bass, 1985; Yukl, 2002). Traditional leadership theory is mostly focused on middle managers, and there is criticism that there is a limit to explaining leadership of CEOs who exert great influence on organizational success and failure(Lee, 2010; Lee, 2006; Kouzes and Posner, 1995).

Modern members of organizations began to show a tendency to prefer leadership with leader's vision, creativity, and morality rather than unconditionally complying with leader's authority and power. In order to actively cope with such changes, transformational leadership is a new type of leadership. Furthermore, transformational leadership is evaluated as a leadership type with excellent qualities or characteristics of the leader of the organization to improve the productivity of the organization.

Bass(1985) developed the Multifactor Leadership Questionnaire(MLQ) composed of charisma, individual consideration, and intellectual stimulation to measure transformational leadership.

Charisma, which can be understood as an individual's intrinsic characteristic, can be defined as the ability to promote loyalty and commitment to the organization as well as to engross the organizational members about the assigned job in the organization by presenting the vision with confidence and enthusiasm for success(Seo and Yoon, 2003; Pawar and Eastman, 1997). House(1971) presented strong desire for power, strong confidence, and strong belief in his own belief as characteristics of charismatic leader. Such characteristics not only give strong motivation to influence the organization members, but also contribute to the organization members to raise trust in the leader. In other words, it is a leadership type that helps to improve the development of individuals and organizations by linking with the leader's personal superiority and confidence, the accurate presentation of goals, and the ability to present visions for success and achievement of organization members and organizations. Therefore, charismatic leaders are naturally respected by their members, and even if there is a crisis in the organization, they can present rational solutions and future directions based on the characteristics of the leader.

Individual consideration can be understood as leadership characteristics that leaders pay individual attention to organizational members, provide guidance and advice for individual development, identify personal feelings and concerns of organizational members, and show interest and affection in personal circumstances and problems (Roward and Schlotz, 2009). Therefore, individual consideration not only promotes the

satisfaction of the leader but also provides the leader with the opportunity to understand the personal interests of the organizational members, which ultimately promotes the productivity of the individual and the organizational level. In other words, leaders who emphasize individual consideration of transformational leadership should recognize the difference in the desires of individual members of the organization and need to raise the consciousness of change through interest in individual members. In addition, it provides new education and training suitable for the individual's competence in order to satisfy the desires that are relatively higher than the current level of desires of the organizational members, and thus it has the characteristics of emphasizing the development of potential to improve the performance of the individual and the organizational level by providing confidence and ability in the job.

Intellectual stimulation can be understood as the characteristics of leadership that changes and stimulates their perceptions and behaviors by constantly demanding changes in beliefs, values, and problem solving methods of organizational members rather than focusing on direct changes in organizational members' behaviors. In analyzing the situation beyond the past thinking and work processes, intellectual stimulation means that the leader encourages the members of the organization to have more creativity and intuition and logical thinking for solving problems(Seo and Yoon, 2003; Lievens et al., 1997; Yamarino and Bass, 1990). The type of leader who emphasizes intellectual stimulation reminds them to approach problems in a new way and constantly question them in order to improve and change the knowledge, rationality, and problem solving ability of the organization members(Avolio et al., 1999). Therefore, it is not satisfied with the problem solving through short-term or partial methods, but also has a negative view on the problem solving method used in the past.

3) Management Innovation Activities

Innovation is defined as a change that creatively destroys the balance of the market through new combination(Schumpeter, 1934), and Drucker(1985) said that innovation is a creative process that combines the existing ones to create a new form different from the past as an invention or creation process. Innovation defined the pursuit of substantial change at the enterprise level by promoting continuous growth by appropriately utilizing opportunities and threats to various environmental changes around the company, improving the wrong parts and maintaining a healthy organization(Damanpour, 1991).

Management innovation refers to a series of deliberate and planned programs that respond to environmental changes that are taking place throughout the management. In order to achieve the success of the program, it is said that the specific activities of

various changes and improvement attempts that are newly promoted in each field of the organization are management innovation activities. Amabile(1997) defined management innovation as an effort to make creative change in the corporate management system in order to strengthen corporate competitiveness, and specifically, it is a process to contribute to corporate performance by combining creative ideas of members and applying them to products, services or operating methods. In the early days, management innovation was aimed at technological innovation and radical innovation, but it includes all changes that contribute to competitiveness as competition among companies becomes fierce.

In addition, management innovation activities that started with quality inspection have been developed and used in various management innovation techniques until management process and manufacturing process. Due to the poor management environment, small and medium venture companies in Korea are experiencing difficulties despite various attempts for management innovation due to lack of management, management techniques and organizational infrastructure.

The types of innovation are divided into various types according to the researcher, the innovation object, and the analysis level. Generally, based on the activities performed by the organization, it can be divided into product innovation, process innovation, personnel innovation, and organizational innovation(Knight, 1967).

This study is to classify management innovation activities into managerial innovation and technological innovation by reflecting the opinions of many researchers such as Damanpour(1991), and managerial innovation includes organizational innovation and personnel innovation, and technological innovation includes product innovation and process innovation.

(1) Managerial Innovation

Managerial innovation is an innovation related to the structure and human factors of an organization, which means improvement for the optimization of organizational structure and organizational activities related to the consciousness and behavior of the organization members and the performance of the organization. The purpose of innovation activities is to improve performance, but it is no exaggeration to say that the success or failure of innovation depends on organizational structure and human factors because it is the person who leads innovation activities. In order to adapt to the rapidly changing business environment and achieve desirable results, organizational members need to boldly break away from stereotypes and change their thinking and consciousness. Managerial innovation includes organizational innovation and personnel innovation in detail.

Organizational innovation is a creative change in organizational structure related to corporate performance. Organizational innovation includes activities that try to contribute to the performance of an organization by intentionally trying new changes to the organization by applying new ideas or planning changes to cope with internal or external environmental changes to the organizational structure. In other words, it is a series of processes for the use of changing the structure of the organization, the behavior of the members, the attitude and the consciousness so that it can set the ideal goal pursued by the organization and become the optimal organization to implement this goal. Organizational innovation shall be introduced to improve the performance of the organization, such as the relocation of the organization and the reorganization of the work, by actively accepting the environmental changes of the enterprise.

Personnel innovation is a creative change in human factors related to employees' consciousness. Personnel innovation refers to improvement activities that motivate members to select, promote, evaluate, and compensate members of the organization, and to induce changes in their work ability and attitude. Introduction of new ideas is an innovation for introducing educational programs for awareness reform, introducing problem solving techniques, changing attitudes of organizational members, and changing work ability. At the same time, it is an activity to maximize the positive participation of human resources and the good influence of human resources on corporate performance.

(2) Technological Innovation

Technological innovation includes product innovation and process innovation. The goal of these two innovations is ultimately the same as the creation of value and profit, but there is a difference in planning and implementing it.

Product innovation means a breakthrough improvement of related functions, including a breakthrough improvement of products or services and user convenience functions, in relation to the characteristics and use of products in order to meet the needs of customers and markets. Product innovation has a path to increase market share and generate profit by entering new markets by developing new products differentiated from existing products or adding new functions to the market. Therefore, product innovation can increase sales and business management of companies by stimulating consumers' desire to purchase and performing market alternative functions of existing products by increasing the value of products.

Process innovation is an activity technique that applies innovation to major processes by grasping processes from a process perspective as a management innovation targeting production processes among the whole tasks in management. Process innovation is to try new changes in the production and operation of the organization, that is, the work

method, production facilities, and process flow to increase production efficiency or productivity in the process of producing products. Process innovation can maximize productivity and improve profit structure by rationalizing production process, reducing material cost and labor cost, and producing timely intended quality products. Process innovation is often attempted at the mass production stage after the quality of the production products has stabilized and standardized. Putting new products on the market keeps companies profitable, but investing in innovation in the process has the effect of reducing the cost of the company.

Technological innovation changes the company itself so that innovative companies can maintain higher management performance than non-innovative companies in a sustainable and long-term manner(Geroski et al., 1993). It is understood that the fact that technological innovation contributes to increasing the profit rate of companies and growing companies and that it can privatize the benefits of such technological innovation is an incentive to pursue technological innovation(Freel, 2000).

4) Management Performance

The management performance of the company refers to the results obtained through effective and efficient management of human and material resources of a company. This can be seen as a result of realizing the goals of each business division, function, work, group and individual that make up the company.

Traditionally, the performance measurements based on financial statements have been used to measure the performance of companies, but in the changed management environment facing many companies today, the traditional performance management system is considered to be inadequate(Cho, 2009). Therefore, it is necessary to take an interest in actual performance from the perspective of the company by integrating financial and non-financial perspectives considering external factors in management. In this study, not only financial performance but also non-financial performance were considered to measure business performance.

Financial performance is the most consultative concept and is based on financial indicators that affect the economic goals of the company. In general, financial performance is an internal evaluation factor of a company, such as profitability, growth potential, stability, and productivity. The most commonly used evaluation criteria are profitability and sales growth rate. Kim(2002) analyzed profitability and growth as an analysis index of organizational performance, and the total capital return net profit ratio as a profitability index and the sales growth rate as a growth index were utilized. As such, the financial results of marketing activities are defined as financial performance and

are related to profitability measurement such as sales return, investment return, and asset return. In this study, we analyze the growth index of small and medium venture companies using the sales growth rate and total asset growth rate, the operating profit growth rate as profitability index, and the improvement of cash flow.

Non-financial performance is qualitative, process-oriented, future-oriented, and long-term measurement index. Non-financial performance induces the decision-making behavior of the manager in the long term, provides better forecast information for long-term financial performance, and is a performance measurement index that meets long-term corporate goals rather than short-term profits of financial performance. In other words, the use of non-financial performance indicators has a positive impact on strategic performance related to the future of the company, such as customer performance and quality performance. As such, non-financial performance information can be a representative management accounting information required by the introduction of advanced production technology(Bledsoe and Ingram, 1997), and various performance management information for achieving strategic management goals from a non-financial perspective is provided according to the purpose and scope of use of management innovation techniques introduced by companies(Park, 2004).

In this study, we analyze the quality improvement level, market share, new product development ability, and turnover rate of employees as non-financial performance indicators to compensate for the shortage of financial performance measurement in measuring the management performance of small and medium venture companies.

2. Research Hypothesis Setting

1) Manager's Competency Characteristics and Management Innovation Activities

The CEOs of small and medium venture companies are usually the owners of companies, and they have direct influence through face-to-face with employees, so the impact of their competency characteristics on the strategic behavior of small and medium venture companies is greater than that of large companies(Park, 1998). In particular, it has a direct influence on whether to introduce new innovation ideas and technology development in technology innovation. Therefore, the will and capacity of managers are important in order to promote successful technological innovation of small and medium venture companies.

The results of the study show that the relationship between manager's competency characteristics and management innovation is positively significant. Therefore, managers

of small and medium venture companies need to make efforts to strengthen their viability and rethink their competitiveness through active efforts for technology development, active response to changes, and active response to uncertain environments.

Hypothesis 1: The competency characteristics of small and medium venture business managers will have a significant impact on management innovation activities.

H1-1 Managerial Competency will have a significant impact on organizational innovation.
H1-2 Technical Competency will have a significant impact on organizational innovation.
H1-3 Creative Competency will have a significant impact on organizational innovation.
H1-4 Managerial Competency will have a significant impact on personnel innovation.
H1-5 Technical Competency will have a significant impact on personnel innovation.
H1-6 Creative Competency will have a significant impact on personnel innovation.
H1-7 Managerial Competency will have a significant impact on product innovation.
H1-8 Technical Competency will have a significant impact on product innovation.
H1-9 Creative Competency will have a significant impact on product innovation.
H1-10 Managerial Competency will have a significant impact on process innovation.
H1-11 Technical Competency will have a significant impact on process innovation.
H1-12 Creative Competency will have a significant impact on process innovation.

2) Manager's Leadership Characteristics and Management Innovation Activities

Leadership is an individual's ability to encourage and empower organizational members to achieve organizational goals efficiently. Scott and Bruce(1994) argued that leader support, trust and autonomy induce creative ideas and innovation activities of organizational members in a study that reveals the antecedents of innovative behavior. In other words, it is shown that organizational members are encouraging them to move away from the existing thinking framework and to promote creative thinking and behavior in solving problems or tasks, and directly affect individual innovation activities by providing psychological stability to organizational members and motivating them to perform new work methods (Lim and Yoon, 1999).

According to Elenkov et al.(2005), there is a difference in innovation capacity according to leadership and propensity characteristics of CEOs, and the influence of organization size is weak. Thus, the existing results of the study emphasize that the leadership characteristics of managers are factors that affect management innovation activities.

Based on the results of the previous studies, this study aims to establish the following hypotheses to investigate the effects of leadership characteristics of small and medium venture business managers on management innovation activities by sub-component factors.

Hypothesis 2: The leadership characteristics of small and medium venture business managers will have a significant impact on management innovation activities.

H2-1 Contingent Reward will have a significant impact on organizational innovation.
H2-2 Management by Exception will have a significant impact on organizational innovation.
H2-3 Charisma will have a significant impact on organizational innovation.
H2-4 Individual Consideration will have a significant impact on organizational innovation.
H2-5 Intellectual Stimulation will have a significant impact on organizational innovation.
H2-6 Contingent Reward will have a significant effect on personnel innovation.
H2-7 Management by Exemption will have a significant impact on personnel innovation.
H2-8 Charisma will have a significant impact on personnel innovation.
H2-9 Individual Consideration will have a significant effect on personnel innovation.
H2-10 Intellectual Stimulation will have a significant impact on personnel innovation.
H2-11 Contingent Reward will have a significant impact on product innovation.
H2-12 Management by Exemption will have a significant impact on Product Innovation.
H2-13 Charisma will have a significant impact on product innovation.
H2-14 Individual Consideration will have a significant impact on product innovation.
H2-15 Intellectual Stimulation will have a significant impact on product innovation.
H2-16 Contingent Reward will have a significant impact on fair innovation.
H2-17 Management by Exemption will have a significant impact on Fair Innovation.
H2-18 Charisma will have a significant impact on process innovation.
H2-19 Individual Consideration will have a significant impact on process innovation.
H2-20 Intellectual Stimulation will have a significant impact on process innovation.

3) Management Innovation Activities and Management Performance

Small and medium venture companies with limited resources compared to large corporations are very important to secure competitiveness through innovation activities, so it is essential to create management performance through cooperation between companies. In terms of performance, quality, and cost, innovative companies provide

innovative products that are improved compared to existing products, thus temporarily securing a higher competitive advantage than other competitors in the market, which means that they show higher management performance than non-innovative companies.

In a study of small and medium manufacturing companies, innovative companies with product innovation showed higher sales growth than non-innovative companies (Roper, 1997), and in another study, small and medium-sized companies with product innovation showed higher sales growth, employee growth and per employee profit than small and medium-sized companies with less product innovation(Freel, 2000). In addition, in the study of Heunks(1998), it was proved that process innovation, marketing innovation and R&D innovation had positive correlation with growth performance in the sample of small companies.

Based on the previous studies, this study expects a significant impact relationship between management innovation activities and management performance of small and medium venture companies and sets up the following hypotheses.

Hypothesis 3: Management innovation activities will have a significant impact on management performance.

H3-1 Organizational Innovation will have a significant impact on financial performance.
H3-2 Personnel Innovation will have a significant impact on financial performance.
H3-3 Product Innovation will have a significant impact on financial performance.
H3-4 Process Innovation will have a significant impact on financial performance.
H3-5 Organizational Innovation will have a significant impact on non-financial performance.
H3-6 Personnel Innovation will have a significant impact on non-financial performance.
H3-7 product Innovation will have a significant impact on non-financial performance.
H3-8 process Innovation will have a significant impact on non-financial performance.

4) Mediating Effects of Innovation Activities on Relationship between Competency and Performance

The important task of a manager is to establish and implement a management style(i.e. commitment) that is appropriate for the company, and also to innovate occasionally. Considering the characteristics of management of small and medium venture companies that tend to rely on the individual competence of the manager, the individual competence of the manager is an important factor in improving the performance of the company and the management innovation activities for it.

If the manager's ability and willingness to innovate are very active, it appears to be an act of progressing innovation. In this regard, Zarhra(1996) verified that the direction of innovation and risk reduction as the competency characteristics of managers affects product innovation, process innovation, marketing performance of management performance and sales performance of technology innovation. The technical competence of the manager is related to the experience and ability of the manager and the technology investment. As such, the mediating effect of management innovation activities between manager's competency characteristics and management performance is expected to be significant, and the following hypotheses were established.

Hypothesis 4: Management innovation activities will have a significant mediating effect between manager's competency characteristics and management performance.

H4-1 Managerial Innovation will have a significant mediating effect between manager's competency characteristics and management performance.

H4-2 Technological Innovation will have a significant mediating effect between manager's competency characteristics and management performance.

5) Mediating Effects of Innovation Activities on Relationship between Leadership and Performance

In the era of the Fourth Industrial Revolution, in order for companies to survive and grow in a rapidly changing environment, they are not only actively coping with internal and external management environments, but also paying attention to organizational leadership that can improve organizational performance by enhancing organizational members' ability and motivation internally. In particular, given the management characteristics of small and medium venture companies, the leadership of managers will not be overemphasized as much as it can influence the success or failure of companies.

Organizational leaders should organize companies to reflect the purpose and vision of the company through communication, and try to protect the identity of the company, such as the unique value of the company and the unique vision of the company, from internal and external threats. Organizational vision combined with organizational structure helps to define the unique capabilities of the organization, and eventually results in improving management performance(Baron, 2000). The personnel system for strategic leadership,

R&D investment and management innovation activities of managers is analyzed to affect innovation performance according to organizational members and situation factors(Witt, 2004).

As such, the mediating effect of management innovation activities between leadership characteristics and management performance of managers is expected to be significant, and the following hypotheses were established.

Hypothesis 5: Management innovation activities will have a significant mediating effect between manager's leadership characteristics and management performance.

H5-1 Managerial Innovation will have a significant mediating effect between transactional leadership and management performance.

H5-2 Managerial Innovation will have a significant mediating effect between transformational leadership and management performance.

H5-3 Technological Innovation will have a significant mediating effect between transactional leadership and management performance.

H5-4 Technological Innovation will have a significant mediating effect between transformational leadership and management performance.

Ⅲ. Research Model and Empirical Analysis

1. Research Model

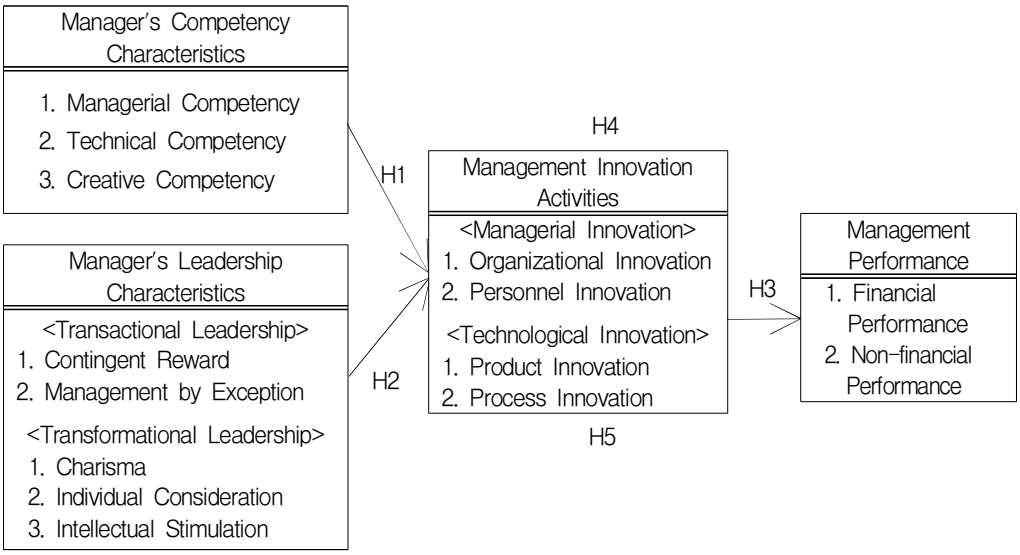
1) Design of Research Model

The quality and capacity of small and medium venture business managers are important resources for improving management performance when looking at the organizational structure and management environment of small and medium venture companies. This study is an empirical study to derive a plan to improve management performance by analyzing the effects of competency characteristics and leadership characteristics that have a decisive impact on the commission(i.e. commitment) of small and medium venture business managers on management innovation activities.

To this end, the study empirically confirms the relationship between manager's individual competency characteristics and management innovation activities, the

relationship between manager's leadership characteristics and management innovation activities, and the mediating effect of management innovation activities to improve management performance of each factor. For this study, a research model was designed as <Figure 3-1> based on the theoretical algorithm of previous studies.

<Figure 3-1> Research Model



2) Research Object and Analysis Method

(1) Research Object and Data Collection

For the empirical analysis of this study, the survey was conducted from September 13 to November 18, 2021. A questionnaire survey was conducted on small and medium venture companies that are in a main business relationship with the K Bank, a financial institution specialized in supporting small and medium venture companies in South Korea. A total of 800 copies were distributed and 134 copies of the questionnaire were collected. Among them, 118 copies of the questionnaire were used for analysis except for insufficient responses.

(2) Composition of Questionnaire

The questionnaire used in the empirical analysis consists of the items of competency characteristics, leadership characteristics, management innovation activities, and management performance of small and medium venture business managers based on

theoretical consideration of previous studies. The detailed items and the number of questions in the questionnaire were the same as <Table 3-1>, and were measured using the Likert 5-point scale.

<Table 3-1> Questionnaire Composition

concept variable	detailed component item		question number	reference literature
Manager's Competency Characteristics	Managerial Competency		7	Spencer and Spencer(1993), Chandler and Hanks(1994), Lim(2014)
	Technical Competency		7	
	Creative Competency		7	
Manager's Leadership Characteristics	Transactional Leadership	Contingent Reward	5	Bass(1985), Cho(2011)
		Management by Exception	5	
	Transformational Leadership	Charisma	5	
		Individual Consideration	5	
		Intellectual Stimulation	5	
Management Innovation Activities	Managerial Innovation	Organizational Innovation	5	Miller and Friesen(1984), Madanmoha(2005), Cho(2015)
		Personnel Innovation	5	
	Technological Innovation	Product Innovation	5	
		Process Innovation	5	
Management Performance	Financial Performance		4	Kaplan and Norton(1992), Kim(2002), Jung(2016)
	Non-financial Performance		5	
Demographic variable			8	

(3) Statistical Analysis Method

Exploratory factor analysis was used to remove variables that hinder validity and to verify reliability, the Cronbach's coefficient of these factors was obtained. Also, correlation analysis was conducted to determine whether there was a statistically significant correlation between each factor, and to verify the mediating effect, a three-step mediating regression analysis was conducted. Also, for the empirical analysis of this study, IBM SPSS 22 was used as a statistical package.

3) Demographic Characteristics of Sample

The demographic characteristics of the samples collected for the empirical study of this paper are shown in <Table 3-2>. The frequency analysis was conducted on the gender, age, academic background, corporate style, type of industry, number of employees, firm age, and annual sales scale.

<Table 3-2> Demographic Characteristics of Sample

characteristics		frequency	ratio (%)	characteristics		frequency	ratio (%)
gender	man	90	76.3	number of employees	under 10	26	22.0
	woman	28	23.7		10~30	47	39.8
age	under 30s	3	2.5		30~50	17	14.4
	30s	20	16.9		50~100	13	11.0
	40s	30	25.4		over 100	15	12.7
	50s	42	35.6	firm age (years)	less than five	19	16.1
	over 60s	23	19.5		6~10	29	24.6
education	below high school graduate	1	0.8		11~15	30	25.4
	high school graduate	14	11.9		16~20	14	11.9
	college graduate	91	77.1		more than 21	26	22.0
	graduate school graduation	12	10.2	sales scale (yearly) (won)	under billion	15	12.7
corporate style	private company	12	10.2		1~3 billion	24	20.3
	corporation	99	83.9		3~10 billion	40	33.9
	limited company	2	1.7		10~50 billion	28	23.7
	others	5	4.2		over 50 billion	11	9.3
type of industry	Manufacture of electrical, electronic, and semiconductors					30	25.4
	Manufacture of automobile, machinery, and steel					14	11.9
	Manufacture of petroleum expansion, energy and environment					4	3.4
	Fabrication of textiles, clothing, and fashion					8	6.8
	Health, medical care, pharmaceuticals, and bio-manufacturing					10	8.5
	Others product manufacture					26	22.0
	et cetera(all industries except manufacturing)					26	22.0
Total						118	100.0

2. Empirical Analysis

1) Validity and Reliability Verification

Exploratory factor analysis was conducted to verify the validity of the concept of the measurement variables of this research model. Varimax rotation method was used for factor rotation, and main component analysis method was used for factor extraction. The factor loading amount is a value that indicates the degree of correlation between each measurement item and the factor, and if the factor loading amount is 0.4 or more, it is judged to be significant and selected as the measurement variable.

Next, to verify the reliability of the measurement variables, the Cronbach's coefficient, which measures the internal consistency of the variables, was obtained. Reliability is an indicator of the degree to which the results are measured equally when repeatedly measured by the measurement tool. Generally, social science studies suggest that more than 0.6 have secured reliability.

The exploratory factor analysis results of manager's competency characteristics were classified into creative competency, managerial competency, and technical competency as shown in <Table 3-3>, and the Cronbach alpha coefficient was above 0.8, which secured reliability.

<Table 3-3> Exploratory Factor Analysis on the Competency Characteristics of Managers

variable	measurement items	factor		
		factor1	factor2	factor3
Creative Competency	bold and original use of new things	**0.795**	0.173	0.232
	have a fresh mind	**0.790**	0.261	0.156
	an amazing creative idea	**0.757**	0.181	0.285
	my experience of working in my own new way	**0.748**	0.241	0.108
	ability to solve problems using unique methods	**0.740**	0.187	0.149
	I'm more likely to create new ideas	**0.712**	0.315	0.167
	create new ideas better than others	**0.658**	0.282	0.329
Managerial Competency	understanding of financial status, flow of funds	0.133	**0.735**	-0.04
	the ability to efficiently delegate authority	0.172	**0.703**	0.185
	capability to allocate resources and coordinate tasks	0.196	**0.676**	0.309
	motivate employees to achieve goals	0.241	**0.667**	0.252
	have excellent organizational control	0.281	**0.661**	0.237
	understand employees to have a vision	0.332	**0.646**	0.255
	capability to supervise, persuade and guide employees	0.252	**0.565**	0.227
Technical Competency	a technology expert who is second to none	0.203	0.129	**0.851**
	the ability to use skills in specialized fields	0.170	0.230	**0.848**
	having expertise in the field of technology	0.179	0.252	**0.795**
	the highest technology holder in the industry	0.233	0.182	**0.778**
	technical problem solving ability is excellent	0.368	0.308	**0.569**
	the technical manpower secure and application capability excellent	0.408	0.393	**0.409**
eigen value		9.121	1.838	1.567
variance(%)		45.607	9.189	7.835
accumulation(%)		45.607	54.796	62.631
Cronbach's α		0.911	0.858	0.891

In addition, the exploratory factor analysis results on the management performance were classified into non-financial performance and financial performance as shown in <Table 3-4>, and the Cronbach alpha coefficient was above 0.8, which secured reliability.

<Table 3-4> Exploratory Factor Analysis on the Management Performance

variable	measurement items	factor	
		factor1	factor2
Non-financial Performance	fast development of new products in accordance with market demand	**0.807**	0.058
	quickly reflect customer suggestions or complaints	**0.772**	0.279
	product quality levels are improving	**0.755**	0.318
	a low turnover rate of employees	**0.749**	0.269
	market share is continuously increasing	**0.723**	0.392
Financial Performance	the trend of increasing sales in recent years	0.145	**0.891**
	the trend of the recent improvement in OP margin	0.262	**0.845**
	total assets increase trend in recent years	0.295	**0.825**
	the fund situation and cash flows improve	0.337	**0.753**
eigen value		5.013	1.344
variance(%)		55.699	14.935
accumulation(%)		55.699	70.634
Cronbach's α		0.860	0.894

The results of exploratory factor analysis on the leadership characteristics of managers were divided into contingent reward, individual consideration, charisma, intellectual stimulation, and management by exceptions such as <Table 3-5>, and the Cronbach alpha coefficient was all 0.6 or more, which secured reliability. In particular, individual consideration and charisma show more than 0.8 reliability.

<Table 3-5> Exploratory Factor Analysis on the Leadership Characteristics of Managers

variable	measurement items	factor				
		factor1	factor2	factor3	factor4	factor5
Transactional Leadership - Contingent Reward	compensation and punishment for achieving goals	**0.752**	0.295	0.149	0.016	0.086
	try to provide more rewards	**0.724**	0.069	0.210	0.048	0.092
	appropriate compensation for the efforts of employees	**0.706**	0.065	0.232	0.124	0.098
	understanding profit or rewards when achieving goals	**0.668**	0.234	0.171	0.062	0.054
	interest in efficient management rather than creating ideas	**0.480**	0.096	-0.290	0.382	0.138
Transformational Leadership- Individual Consideration	frequent encouragement of employees	0.139	**0.824**	0.226	0.151	0.014
	personal interest in all employees	0.205	**0.780**	0.078	0.241	0.048
	assigning the job that meets the staff's ability	0.303	**0.629**	0.152	0.234	0.116
	helps employees achieve what they want	0.302	**0.545**	0.241	0.362	0.197
	give a caring lesson to the employees	-0.002	**0.527**	0.442	0.291	0.195
Transformational Leadership- Charisma	the rewarding pride of employees	0.213	0.244	**0.697**	0.334	0.130
	symbol of success and achievement for employees	0.363	0.216	**0.612**	0.168	0.147
	CEO is modeled role models	0.324	0.384	**0.608**	0.124	0.183
	presenting a strong vision of the future	0.492	0.168	**0.573**	0.159	0.048
	trust in the ability to overcome various problems	0.244	0.407	**0.545**	0.003	0.258
Transformational Leadership- Intellectual Stimulation	demand for arguments when presenting opinions	0.009	0.111	0.163	**0.780**	0.116
	understand the various views of other employees	0.049	0.348	0.174	**0.707**	0.097
	new ideas or opinions that employees present	0.257	0.345	0.162	**0.591**	-0.021
	encourage new ways of doing everyday work	0.352	0.338	0.185	**0.464**	0.139
Transactional Leadership- Management by Exception	only interested in the standards presented by the company	0.071	0.086	0.150	0.160	**0.710**
	don't want to make an exception to the routine	0.281	-0.150	0.240	0.069	**0.699**
	do my job the way I always do	0.085	0.202	-0.225	-0.246	**0.687**
	the routine is that employees take care of themselves	-0.015	0.224	0.149	0.164	**0.511**
	measures only necessary if the goal hasn't been achieve	0.070	-0.046	0.394	0.237	**0.465**
eigen value		8.515	1.897	1.672	1.183	1.131
variance(%)		35.481	7.904	6.966	4.929	4.711
accumulation(%)		35.481	43.385	50.351	55.280	59.992
Cronbach's α		0.761	0.855	0.861	0.771	0.661

The results of exploratory factor analysis on management innovation activities were classified into product innovation, organizational innovation, personnel innovation, and process innovation as shown in <Table 3-6>, and the Cronbach alpha coefficient was above 0.7, which secured reliability. In particular, the Cronbach alpha coefficients such as product innovation, organizational innovation, and personnel innovation show reliability of over 0.8.

<Table 3-6> Exploratory Factor Analysis on Management Innovation Activities

variable	measurement items	factor			
		factor1	factor2	factor3	factor4
Technological Innovation-Product Innovation	improve old products and improve new product quality	**0.775**	0.089	0.202	0.097
	creating new products flexibly at the customer's needs	**0.757**	0.148	0.283	0.164
	the degree of introduction of new products is high	**0.748**	0.148	0.155	0.277
	fast development of new products in accordance with demand	**0.673**	0.198	0.116	0.322
	emphasize the development of new products or new services	**0.590**	0.060	0.420	0.176
Managerial Innovation-Organizational Innovation	a lot of attempts to build new organizations	0.211	**0.836**	0.047	0.022
	set management innovation goals and schedule management	-0.025	**0.766**	0.148	0.197
	a team dedicated to management innovation	-0.052	**0.713**	0.139	0.318
	discussing new ideas with other departments	0.280	**0.675**	0.071	0.174
	encourage new ways to perform	0.357	**0.647**	0.198	0.102
Managerial Innovation-Personnel Innovation	the importance of organizational members' participation	0.157	-0.008	**0.803**	0.005
	embrace new ideas from employees	0.173	0.127	**0.747**	0.279
	support for staff ability development training programs	0.235	0.319	**0.633**	0.137
	employees find hard problem solving ways	0.368	0.317	**0.566**	0.073
	promote the education and training of attitude/mental strength	0.410	0.300	**0.460**	0.212
Technological Innovation-Process Innovation	development of a new distribution network for product A/S	0.204	0.197	-0.032	**0.781**
	manufacturing method for the process improvement frequently	0.155	0.227	0.291	**0.698**
	meeting operation for customer service	0.096	0.378	0.266	**0.618**
	trend of reducing the burden of additional costs due to defects	0.326	0.155	-0.003	**0.615**
	quickly handle customer suggestions or inconveniences	0.257	-0.061	0.409	**0.580**
eigen value		7.725	2.051	1.416	1.241
variance(%)		38.626	10.255	7.078	6.204
accumulation(%)		38.626	48.882	55.960	62.164
Cronbach's α		0.860	0.837	0.818	0.799

2) Correlation Analysis

Pearson correlation coefficients between measurement variables were obtained to understand the degree and direction of the relationship between measurement variables of this research model. As a result of the analysis, <Table 3-7> showed a statistically significant correlation between the multiple measurement variables under the significance level of 0.01. Especially, managerial competency had a slightly higher positive correlation with transformational leadership than 0.6. Also, there was a positive correlation between transformational leadership and personnel innovation, technological innovation and non-financial performance more than 0.5.

<Table 3-7> correlation between measurement variables

variable	#1	#2	#3	#4	#5	#6	#7
#1 Competency Characteristics - Managerial Competency	1						
#2 Competency Characteristics - Technical Competency	.602**	1					
#3 Competency Characteristics - Creative Competency	.618**	.597**	1				
#4 Transactional Leadership - Contingent Reward	.531**	.411**	.403**	1			
#5 Transactional Leadership - Management by Exception	.334**	.170	.199*	.324**	1		
#6 Transformational Leadership - Charisma	.668**	.497**	.553**	.604**	.433**	1	
#7 Transformational Leadership - Individual Consideration	.708**	.527**	.512**	.502**	.342**	.664**	1
#8 Transformational Leadership - Intellectual Stimulation	.640**	.411**	.512**	.442**	.314**	.565**	.665**
#9 Managerial Innovation - Organizational Innovation	.460**	.400**	.578**	.241**	.135	.323**	.412**
#10 Managerial Innovation - Personnel Innovation	.497**	.439**	.448**	.396**	.266**	.421**	.574**
#11 Technological Innovation - Product Innovation	.431**	.370**	.459**	.315**	.161	.297**	.377**
#12 Technological Innovation - Process Innovation	.392**	.383**	.385**	.300**	.198*	.266**	.343**
#13 Management Performance - Non-financial Performance	.258**	.268**	.171	.105	.133	.250**	.251**
#14 Management Performance - Financial Performance	.377**	.338**	.284**	.256**	.210*	.303**	.328**

variable	#8	#9	#10	#11	#12	#13	#14
#8 Transformational Leadership - Intellectual Stimulation	1						
#9 Managerial Innovation - Organizational Innovation	.494**	1					
#10 Managerial Innovation - Personnel Innovation	.573**	.478**	1				
#11 Technological Innovation - Product Innovation	.479**	.426**	.627**	1			
#12 Technological Innovation - Process Innovation	.363**	.509**	.528**	.572**	1		
#13 Management Performance - Non-financial Performance	.264**	.296**	.368**	.214*	.386**	1	
#14 Management Performance - Financial Performance	.360**	.330**	.487**	.596**	.582**	.587**	1

* p<0.05 ** p<0.01 *** p<0.001

3) Hypothesis Verification of Research Model

(1) Hypothesis Test on the Relationship between Manager's Competency Characteristics and Management Innovation Activities

Multiple regression analysis was conducted to verify whether the competency characteristics of small and medium venture business managers have a significant effect on management innovation activities. This is the first step for analyzing the effectiveness of management innovation activities of small and medium venture companies, which is the core theme of this study.

The results of the analysis of <Table 3-8> showed that creative competency had a statistically significant positive effect on organizational innovation of management

<Table 3-8> Multiple Regression Analysis of Manager's Competency Characteristics and Management Innovation Activities

independent variable		dependent variable : Organizational Innovation			
		beta(β)	standard error	t-value	significant probability
Competency Characteristics	Managerial Competency	0.188	0.125	1.507	0.135
	Technical Competency	0.030	0.103	0.293	0.770
	Creative Competency	0.497	0.110	4.516	0.000***
R^2=0.352 F=20.601***					
independent variable		dependent variable : Personnel Innovation			
		beta(β)	standard error	t-value	significant probability
Competency Characteristics	Managerial Competency	0.341	0.124	2.744	0.007**
	Technical Competency	0.155	0.103	1.513	0.133
	Creative Competency	0.173	0.109	1.580	0.117
R^2=0.293 F=15.751***					
independent variable		dependent variable : Product Innovation			
		beta(β)	standard error	t-value	significant probability
Competency Characteristics	Managerial Competency	0.245	0.129	1.893	0.061
	Technical Competency	0.072	0.107	0.672	0.503
	Creative Competency	0.294	0.114	2.577	0.011*
R^2=0.229 F=12.562***					
independent variable		dependent variable : Process Innovation			
		beta(β)	standard error	t-value	significant probability
Competency Characteristics	Managerial Competency	0.178	0.110	1.616	0.109
	Technical Competency	0.139	0.091	1.522	0.131
	Creative Competency	0.144	0.097	1.482	0.141
R^2=0.182 F=9.676***					

* p<0.05 ** p<0.01 *** p<0.001

innovation with β=0.497(t=4.516***) and a significance level of 0.001. Therefore, hypothesis 1-3 was adopted. The managerial competency was β=0.341(t=2.744**) in personnel innovation, and it had a statistically significant positive effect at the significance level 0.01. Therefore, hypothesis 1-4 was adopted. And the creative competency was β=0.294(t=2.577*) in product innovation, and it was statistically significant positive(+) under the significance level of 0.05, so hypothesis 1-9 was adopted. The other hypotheses were rejected, especially, the competency characteristics of small and medium venture business managers were analyzed to have no effect on process innovation among management innovation activities.

In particular, the technical competency of small and medium venture business managers did not show a statistically significant positive(+) effect on management innovation activities. This is different from the previous studies.

(2) Hypothesis Test on the Relationship between Manager's Leadership Characteristics and Management Innovation Activities

Next, multiple regression analysis was conducted to verify whether leadership characteristics of small and medium venture business managers have a significant effect on management innovation activities.

The result of <Table 3-9> shows that the intellectual stimulation of transformational leadership has a statistically significant positive effect on organizational innovation at a significance level of 0.01, β=0.483(t=3.549**), which means that hypothesis 2-5 was adopted. The individual consideration of transformational leadership was β=0.339 (t=2.965**) in personnel innovation, and it had a statistically significant positive effect at the significance level 0.01, so hypothesis 2-9 was adopted. The intellectual stimulation of transformational leadership was β=0.382(t=3.281**) in personnel innovation, and it was statistically significant positive(+) at the significance level 0.01, so hypothesis 2-10 was adopted. And the intellectual stimulation of transformational leadership was β =0.468(t=3.534*) in product innovation, and it was statistically significant positive(+) under the significance level of 0.05, so hypothesis 2-15 was adopted. In particular, the leadership characteristics of small and medium venture business managers were analyzed to have no effect on process innovation among management innovation activities. In addition, there was no statistically significant positive relationship between transactional leadership and management innovation activities of small and medium venture business managers in this study.

(3) Hypothesis Test on the Relationship between Management Innovation Activities and Management Performance

Continuously, multiple regression analysis was conducted to verify whether management innovation activities of small and medium venture business managers have a significant effect on management performance.

As for the analysis results of <Table 3-10>, personnel innovation had a statistically significant positive effect on financial performance with β=0.313(t=2.393*) and a significant level of 0.05. Therefore, hypothesis 3-2 was adopted. The hypothesis 3-4 was adopted as the process innovation had a statistically significant positive effect on financial performance with β=0.394(t=2.600*) and a significant level of 0.05. The product innovation was β=0.333(t=3.618***) in non-financial performance, and it had a statistically significant positive effect at the significance level of 0.001. Therefore,

<Table 3-9> Multiple Regression Analysis of Manager's Leadership Characteristics and Management Innovation Activities

independent variable		dependent variable : Organizational Innovation			
		beta(β)	standard error	t-value	significant probability
Transactional Leadership	Contingent Reward	-0.013	0.119	-0.106	0.915
	Management by Exception	-0.063	0.116	-0.538	0.592
Transformational Leadership	Charisma	0.024	0.128	0.189	0.851
	Individual Consideration	0.166	0.134	1.241	0.217
	Intellectual Stimulation	0.483	0.136	3.549	0.001**
R^2=0.226 F=7.818***					
independent variable		dependent variable : Personnel Innovation			
		beta(β)	standard error	t-value	significant probability
Transactional Leadership	Contingent Reward	0.123	0.102	1.213	0.228
	Management by Exception	0.054	0.099	0.547	0.585
Transformational Leadership	Charisma	-0.070	0.109	-0.645	0.520
	Individual Consideration	0.339	0.114	2.965	0.004**
	Intellectual Stimulation	0.382	0.116	3.281	0.001**
R^2=0.378 F=15.226***					
independent variable		dependent variable : Product Innovation			
		beta(β)	standard error	t-value	significant probability
Transactional Leadership	Contingent Reward	0.150	0.116	1.296	0.198
	Management by Exception	-0.014	0.113	-0.120	0.905
Transformational Leadership	Charisma	-0.065	0.124	-0.527	0.599
	Individual Consideration	0.094	0.130	0.721	0.472
	Intellectual Stimulation	0.468	0.132	3.534	0.001*
R^2=0.213 F=7.348***					
independent variable		dependent variable : Process Innovation			
		beta(β)	standard error	t-value	significant probability
Transactional Leadership	Contingent Reward	0.141	0.101	1.406	0.162
	Management by Exception	0.063	0.098	0.640	0.523
Transformational Leadership	Charisma	-0.064	0.108	-0.590	0.556
	Individual Consideration	0.129	0.113	1.144	0.255
	Intellectual Stimulation	0.212	0.115	1.844	0.068
R^2=0.132 F=4.566**					

* p<0.05 ** p<0.01 *** p<0.001

hypothesis 3-7 was adopted. And the process innovation had a statistically significant positive effect on non-financial performance with β=0.405(t=3.798***) and a significant level of 0.001. In this study, organizational innovation did not have a significant effect on financial and non-financial performance of management performance.

(4) Hypothesis Verification of the Mediating Effect of Management Innovation Activities between Manager's Competency Characteristics and Management Performance

<Table 3-10> Multiple Regression Analysis of Management Innovation Activities and Management Performance

independent variable		dependent variable : Financial Performance			
		beta(β)	standard error	t-value	significant probability
Managerial Innovation	Organizational Innovation	0.093	0.111	0.840	0.403
	Personnel Innovation	0.313	0.131	2.393	0.018*
Technological Innovation	Product Innovation	-0.181	0.131	-1.385	0.169
	Process Innovation	0.394	0.152	2.600	0.011*
R^2=0.176 F=7.230***					
independent variable		dependent variable : Non-financial Performance			
		beta(β)	standard error	t-value	significant probability
Managerial Innovation	Organizational Innovation	-0.045	0.078	-0.575	0.567
	Personnel Innovation	0.102	0.092	1.107	0.271
Technological Innovation	Product Innovation	0.333	0.092	3.618	0.000***
	Process Innovation	0.405	0.107	3.798	0.000***
R^2=0.429 F=22.970***					

* p<0.05 ** p<0.01 *** p<0.001

In order to verify the mediating effect of management innovation activities in the relationship between manager's competency characteristics and management performance, a three-step mediated regression analysis proposed by Baron and Kenny(1986) was conducted. The three-step mediated regression analysis method is as follows.

First, independent variables in simple regression analysis should have a significant effect on the parameters. Second, independent variables in simple regression analysis should have a significant effect on dependent variables. Third, in multiple regression analysis, which simultaneously puts independent variables and parameters, the parameters should have a significant effect on dependent variables, and the degree of influence of independent variables on dependent variables should be reduced from the second stage. In particular, even though the influence of independent variables decreased in the third stage, if independent variables have a significant effect on dependent variables, there is a partial mediating effect. If independent variables do not have a significant effect on dependent variables, there is a complete mediating effect.

As a result of verifying the mediating effect of managerial innovation in the relationship between manager's competency characteristics and management performance, <Table 3-11> shows that manager's competency characteristics have a statistically significant positive(+) effect on managerial innovation and management performance in the first and second stages, and managerial innovation, which is a parameter in the third stage, has a statistically significant positive(+) effect on management performance. It can be seen that it mediates completely. Therefore, Hypothesis 4-1 was adopted.

<Table 3-11> Verification of Mediating Effect of Managerial Innovation

dependent variable / independent variable	step 1 Managerial Innovation	step 2 Management Performance	step 3 Management Performance		
Competency Characteristics	0.680 (8.873***)	0.412 (4.190***)	0.113 (0.942)	(parameter) Managerial Innovation	0.441 (3.909***)

* p<0.05 ** p<0.01 *** p<0.001 beta(t-value)

And, in the result of verifying the mediating effect of technological innovation in the relationship between manager's competency characteristics and management performance, <Table 3-12>, the full mediating effect of technological innovation can be confirmed in the relationship between manager's competency characteristics and management performance. Therefore, Hypothesis 4-2 was adopted, and it was analyzed that management innovation activities had a complete mediating effect on both management innovation and technology innovation between manager's competency characteristics and management performance.

<Table 3-12> Verification of Mediating Effect of Technological Innovation

dependent variable / independent variable	step 1 Technological Innovation	step 2 Management Performance	step 3 Management Performance		
Competency Characteristics	0.528 (6.733***)	0.412 (4.190***)	0.120 (1.145)	(parameter) Technological Innovation	0.555 (5.280***)

* p<0.05 ** p<0.01 *** p<0.001 beta(t-value)

(5) Hypothesis Verification of the Mediating Effect of Management Innovation Activities between Manager's Leadership Characteristics and Management Performance

The results of verifying the mediating effect of managerial innovation in the relationship between leadership characteristics and management performance are shown in <Table 3-13>. Transactional leadership and transformational leadership have a statistically significant positive(+) effect on managerial innovation and management performance in the first and second stages. In the third stage, managerial innovation, which is a parameter, has a statistically significant positive(+) effect on management performance, but transactional leadership and transformational leadership have no significant effect on management performance. Therefore, it can be seen that complete

mediating effect of managerial innovation in the relationship between leadership characteristics and management performance, so Hypothesis 5-1 and 5-2 were adopted.

<Table 3-13> Verification of Mediating Effect of Managerial Innovation

dependent variable / independent variable	step 1 Managerial Innovation	step 2 Management Performance	step 3 Management Performance		
Transactional Leadership	0.464 (4.332***)	0.314 (2.622*)	0.090 (0.772)	(parameter) Managerial Innovation	0.481 (5.124***)
Transformational Leadership	0.654 (8.431***)	0.421 (4,322***)	0.143 (1.224)		0.425 (3.857***)

* p<0.05 ** p<0.01 *** p<0.001 beta(t-value)

Finally, as a result of verifying the mediating effect of technological innovation in the relationship between leadership characteristics and management performance are shown in <Table 3-14>. Transactional and transformational leadership have a statistically significant positive(+) effect on management performance, and in the third stage, technological innovation, which is a parameter, has a statistically significant positive(+) effect on management performance, but transactional leadership and transformational leadership do not have a significant effect on management performance. Therefore, it can be seen that complete mediating effect of technological innovation in the relationship between leadership characteristics and management performance. Thus, hypothesis 5-3, 5-4 was adopted.

<Table 3-14> Verification of Mediating Effect of Technological Innovation

dependent variable / independent variable	step 1 Technological Innovation	step 2 Management Performance	step 3 Management Performance		
Transactional Leadership	0.396 (3.912***)	0.314 (2.622*)	0.078 (0.704)	(parameter) Technological Innovation	0.596 (6.262***)
Transformational Leadership	0.453 (5.545***)	0.421 (4,322***)	0.178 (1.814)		0.536 (5.395***)

* p<0.05 ** p<0.01 *** p<0.001 beta(t-value)

Ⅳ. Conclusion

This study is an empirical study to find out the factors to improve management performance through the analysis of the relationship between competency characteristics, leadership characteristics and management innovation activities of small and medium venture business managers. The results of this study are summarized as follows.

First, the creative competency of the managers of small and medium venture companies had a significant positive effect on organizational innovation and product innovation, and the managerial competency had a significant positive effect on personnel innovation. In particular, in this study, technical competency did not show a statistically significant positive(+) effect on management innovation activities. The technical competency of the manager is related to the experience and ability of the manager and the technology investment.

Second, the intellectual stimulation of the transformational leadership had a significant positive(+) effect on organizational innovation, personnel innovation and product innovation, and individual consideration had a significant positive(+) effect on personnel innovation. However, there was no significant positive effect on process innovation, especially between transactional leadership and management innovation activities.

Third, in the analysis of the effect of management innovation activities on management performance, personnel innovation had a significant positive(+) effect on financial performance, product innovation had a significant positive(+) effect on non-financial performance, and process innovation had a significant positive(+) effect on both financial performance and non-financial performance. In this study, organizational innovation was analyzed to have no significant effect on financial and non-financial performance.

Fourth, in the mediating effect of management innovation activities between competency characteristics and management performance, managerial innovation and technological innovation of management innovation activities show a complete mediating effect between the competency characteristics and management performance of managers.

Finally, the mediating effect of management innovation activities between leadership characteristics and management performance was found to fully mediate the relationship between leadership characteristics and management performance of managers.

The results of this study show that the creative competency and managerial competency are the influential factors on the management innovation activities, and the influence of the leadership characteristics on the management innovation activities of intellectual stimulation and individual consideration. Furthermore, the significance of this study can be found in that it verified the effectiveness of management innovation activities to maximize the management performance through empirical analysis.

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중소벤처기업 경영자의 역량특성과 리더십특성이 경영혁신활동과 경영성과에 미치는 영향에 관한 연구

황 연*

<요 약>

[연구목적]

본 연구는 중소벤처기업 경영자의 개인 역량특성과 경영혁신활동과의 관계, 중소벤처기업 경영자의 리더십특성과 경영혁신활동과의 관계, 그리고 각 요인들의 경영성과 향상을 위한 경영혁신활동의 매개효과를 실증적으로 검증하는 것을 목적으로 한다.

[연구방법]

선행연구의 이론적 알고리즘을 바탕으로 연구모형을 설계하였으며, 중소벤처기업 지원전문 금융기관인 K은행과 주거래 하고 있는 중소벤처기업 경영자를 대상으로 서면 설문지를 통해 설문조사를 실시하였다. 실증분석을 위하여 탐색적 요인분석, 신뢰도 검증, 상관관계 분석 등을 수행하였고, Baron and Kenny(1986)의 3단계 매개회귀분석을 실시하여 경영혁신활동의 매개효과를 검증하였다.

[연구결과]

중소벤처기업의 경영혁신활동에 미치는 영향요인으로 경영자의 창의적 역량 및 관리적 역량을 실증 검증하였다. 경영자의 리더십특성으로써 변혁적 리더십의 하위구성요소인 지적자극과 개인적 배려의 경영혁신활동에 미치는 영향을 실증 검증하였다. 또한, 중소벤처기업의 경영성과 극대화를 위한 경영혁신활동의 유효성을 실증분석을 통하여 확인하였다.

[연구의 시사점]

중소벤처기업의 경영혁신활동에 영향을 미치는 경영자의 개인 역량특성과 리더십특성에 대한 세부적인 하위구성요소의 검증결과를 실증분석을 통하여 도출함으로써 경영혁신활동의 경영성과 향상방안에 대한 메커니즘을 제시하였다.

<주제어> 역량특성, 리더십특성, 경영혁신활동, 경영성과

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