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A Study on the Effect of Change Management on Organizational Innovation: Focusing on the Mediating Effect of Members' Innovative Behavior

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Abstract: This study is an empirical study on the impact of change management on organizational innovation through innovative behavior in the public sector. The independent variables are the four elements of change management (organizational goal, transformational leadership, participation and communication, education and training), the dependent variable is organizational innovation, and the mediating variable is the innovative behavior of members. The data used for the analysis is the Public Service Recognition Survey 2018 by KIPA (the Korea Institute of Public Administration). Hayes' Process Macro analysis (Model 4) was performed to verify the mediating variable. As a result of the analysis, it was found that change management factors have a positive effect on innovative behavior and organizational innovation. In addition, public officials' innovative behavior played a mediating role between change management and organizational innovation. It was confirmed that the innovative behavior of organizational members is essential to achieve organizational innovation. Among the factors of change management, participation and communication had the highest influence on innovative behavior and organizational innovation.



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Keywords: change management; transformational leadership; organizational goal; participation and communicate; innovative behavior; organizational innovation; hayes process macro

1. Introduction

At the World Economic Forum (WEF), Klaus Schwab emphasized the 4th industrial revolution and described the 4th industrial revolution as “a combination of physical, digital, and bio technologies in new and diverse ways”. It was defined as “an unstoppable shift towards a much more complex form”. This can be seen as a revolution that changes everything as a completely different form beyond the 3rd industrial revolution, which was aimed at simple digitalization [1]. In order to know the competencies required by an organization in this era, the characteristics of the 4th industrial revolution must be grasped first, and the word that best describes the 4th industrial revolution is VUCA. VUCA is a concept derived from the acronym of a word that expresses four characteristics: Volatility, Uncertainty, Complexity, and Ambiguity. In other words, the environment in which organizations are adapting to the era of the 4th industrial revolution is characterized by the rapid speed of change and the wide range of changes, as well as the complex and ambiguous state and results of such change, making it difficult to define [2]. Therefore, the 4th industrial revolution, which has such characteristics, requires all organizations to make more radical changes than the changes that have been made so far, and organizations can be cut off from competition if they do not respond to such changes. Therefore, various modern organizations are implementing innovation as a response strategy for a dynamically changing environment. Public organizations are no exception to the subject of innovation, and they must adapt to the changing environment and lead the industry to increase performance. In the recent era of the 4th industrial revolution, various organizations are trying to survive in

the era of the 4th industrial revolution by using ICT technologies such as big data, robots, blockchain, cloud, artificial intelligence, Internet of Things, and virtual augmented reality in the existing traditional work methods. It is striving for innovation. Public organizations are also actively promoting innovation to respond to the rapidly changing environment in the era of the 4th industrial revolution and improve performance. However, members of the organization can be resistant to change and innovation due to lack of trust, obsession with past successes, distrust of change strategies, relatively high expenditures, threats to value and accidents, and refusal to interfere. Organizations need change management to overcome these resistances and to successfully innovate [3–15]. Therefore, the rapid environmental change in the era of the 4th industrial revolution may be a crisis for organizations that are not ready for change, but for organizations that can actively respond to environmental changes, such environmental change can be an opportunity for a new leap forward. An organization's ability to respond to environmental changes begins with the innovative behavior of organizational members. In order to achieve organizational innovation, the innovative behavior of an organizational member is very important. The purpose of this study is to examine the importance of organizational members' innovative behavior in the relationship between change management and organizational innovation.

This work is organized as follows: after the introduction Section 1, we present a literature review of the concepts and relationships of organizational innovation, innovative behavior, and change management Section 2. Then, we introduce the methodology Section 3 and describe the findings and discussion Section 4. Lastly, we summarize the findings, present policy implications, and conclude Section 5 [16].

2. Literature Review

This study aims to examine whether the innovative behavior of the members of public organizations is influenced by change management factors such as organizational goals, transformational leadership, participation and communication, and education and training. Additionally, it seeks to analyze whether innovative behaviors facilitate organizational innovation. To conduct the analyses, we first review the literature related to the theoretical definition of each variable and the relationship between the variables.

Bozeman frequently mentioned the differences between private and public organizations [17–19]. However, a study by Bozeman and Kingsley (1998) [20] noted that there was no significant difference in organizational innovation between private and public organizations. Therefore, in this study, we would like to conduct a prior study analysis, including the private sector.

2.1. Organizational Innovation

Organizational innovation stands for the radical and fundamental transformation of an organization to an improved state through planned change. An organization is an open system that constantly interacts with the environment. Therefore, organizational innovation is inevitable for one that seeks to adapt to environmental changes. Organizational innovation is a planned change that is guided by a certain value standard, and it is a dynamic and relevant change. The representative definition of organizational innovation is as follows.

Damanpour (1991) [21] sees the adoption of innovation as innovation and defines it as including the creation, development, and execution of new ideas and actions. Therefore, organizational innovation is defined as the creation or purchase of new devices, systems, policies, programs, processes, products, and services in an organization. Jones (2010) [22] argues that organizational innovation refers to the process of moving to a future organizational state better than the present in order to increase organizational effectiveness. In addition, the goal of organizational innovation was defined as finding ways to improve the resources, capabilities, and competencies that will be used to achieve organizational goals. Lastly, Demircioglu (2016) [23] mentions that organizational innovation can be defined as the introduction of something new (an idea, product, service, technology, process, and

strategy) to an organization. In summary, organizational innovation can be defined as a process that fundamentally promotes the intentional and planned change of the organization through its creation, introduction, and application of new ideas, objectives, and tools. The application of behavioral science has become essential in the process of organizational innovation, so as to facilitate the study of organizational diagnosis, its window, catalyst, application process, and training of members.

2.2. Innovative Behavior

Innovative behavior is defined as the process of solving a problem, presenting a solution through knowledge or new ideas from experience, supporting the idea, and realizing the idea to promote the organization's interests [16]. Several scholars have defined various kinds of innovative behaviors. West and Farr (1990) [24] defined it as behavior designed to intentionally introduce and apply new ideas and procedures within groups and organizations in order to improve their performance. Van de Ven (1986) [25] defined it as the creation and execution of new ideas within human relationships over a long period of time. Katz and Kahn (1978) [26] asserted that innovative behavior involves developing or realizing ideas and non-role behavior, whereas Kanter (1988) [27] defined it as products, services, processes, etc. provided by the supporters of creative ideas. Amabile (1998) [28] posited innovation as the process of selecting creative ideas and introducing them to product processes. Thus, innovative behavior can be summarized as the process of adopting creative ideas that are presented or developed by individuals or groups and turning them into useful resources. It is an action that ultimately improves job performance by introducing and improving job skills that alter the work process in an efficient way [17–20].

2.3. Change Management

Change management is an activity that enables members to participate in change effortlessly while simultaneously subduing their shock and resistance to the process of change. It is said that change is the law of nature and is different from the familiar. However, the humans prefer the familiarity and convenience, and this inertia prevents them from changing their current habits. The factors that inhibit organizational change are mainly organizational inertia, traditional culture, the successful approximate response strategies learned in the past, the cost of driving transformation, and conscious/unconscious resistance by organizations. In general, change commences when the factors that facilitate change prevail over the factors to inhibit change. Brown and Morberg (1986) [4] defined planned organizational change as the process of changing the sub-levels of the organizational system—namely the organizational climate, technology, structure, decision-making process, and management system—to achieve organizational goals. Levy (1988) [29] defined change as a wide and multidimensional phenomenon that transforms the organizational paradigm itself beyond the level of piecemeal improvement, and the process of change was modeled as a stage of change in such factors as triggering change, planned change strategies and techniques, confusion process, and paradigm. Greiner (1972) [30] found that the most commonly used strategies for change are leadership, communication among members, and education and training to help stakeholders to implement new concepts, behaviors, skills, and techniques in a new management system. He also stated that there may be participation of all members of the organization, reinforcement for continuity, and counseling to individually resolve causes of resistance that are from outside the organization. Kotter and Schlesinger (1979) [31] asserted that education, participation and communication, specialty and support, negotiations and agreements, manipulation and cooperation, and explicit/implicit coercion are crucial ways to manage resistance to change. In summary, several methods are used for change management, and these methods affect many organizations both directly and indirectly. To this end, we will examine the specific change management promotion plans by setting organizational goals, transformational leadership, participation and communication, and education and training as key factors. Recent research on change management has focused on methodologies to effectively man-

age the resistance of individuals who are impeded for organizational innovation and promoting innovative behavior. We start from Lewin's research, which is the initial study of change management, and it examines changes in the behavioral patterns of individuals (changes to improve the ability of individuals to adapt to the organization within the organization). In other words, research has been conducted focusing on management methods to minimize individual resistance, and such research trends have continued until recently. Change management, which is commonly defined in recent change management research, is defined as intentionally changing the behavior and perception of members so that they can achieve target performance by preventing or eliminating members' resistance to change. In addition, studies have been mainly conducted to minimize resistance from members when promoting innovation. Looking at the preceding studies on the main factors of change management, Greiner (1972) [30] mentioned leadership, communication among members of the organization, education and training, participation of members, and counseling as major factors. Kettinger and Grover (1995) [7] organized the main factors of change management into communication, direct member participation, role playing, and training. Voelpel et al. (2004) [32] mentioned effective leadership, education and training, clear strategies, inter-level communication, and mutual cooperation among members. Whelan-Berry and Somerville (2010) [33] mentioned vision, leader behavior, communication, education and training, employee engagement, personnel systems/practices, and organizational structure. Based on these preceding studies, this study intends to define the factors of change management into four categories: organizational goal, leadership, participation and communication, and education and training. Table 1 below shows the Preceding studies for Component of change management.

Table 1. Table of preceding studies for component of change management (source: authors' elaboration).

Component of Change Management	Definition	Researcher
Organizational goal	<i>Recognize and accept change goal as positive for members of the organization, stakeholders, and the entire organization</i>	[6,34–47]
Transformational leadership	<i>Leaders know the importance of the vision for change across the organization and take action to support its implementation</i>	[34,35,48–54]
Participation and communication	<i>Participation: Employees carry out tasks directly related to change initiatives, such as in pilot groups</i>	[6,7,16,30,34,41,54–67]
	<i>Communication: Long-term, two-way communication about change initiatives, actions, achievements, obstacles, and their resolution</i>	
Education and Training	<i>Training on the skills, core values, or framework of change required by change initiatives</i>	[7,30–32,42,68–72]

2.3.1. Organizational Goal

An organizational goal represents the desired state of the organization. The organizational goal provides a direction for organizational activities and serves as a social force that substantially impacts current activities. An organizational goal also provides the basis for the organization's legality and legitimacy, the organization's standards of action, guidelines for decision-making, and criteria for evaluating the organization's effectiveness [73]. In addition, an organizational goal does not remain the same but rather changes over time. An organizational goal is constantly transforming and growing or disappearing due to changes in the external environment and occasionally due to internal contradictions or structural forces. Organizations undergo transformations in accordance with these changes in organizational goals.

2.3.2. Transformational Leadership

The transformational leadership theory presented by Burns in 1978 was formulated by Bass in 1985 to fit the organizational context. Burns (1978) [74] mentioned that transfor-

mational leadership promotes organizational enthusiasm and facilitates the acceptance of the organizational mission, which enables the organization's interests to be placed before that of the individual. Bass (1985) [75] defined transformational leadership as motivating members of the organization to achieve organizational needs and offer solutions to problems (Matt Bi, 2013). The definitions of other scholars who have studied transformational leadership are as follows. Kuhnert and Lewis (1987) [76] noted that transformational leadership drives organizational trust and improves organizational performance through stimulation and consideration. Conger (1999) [77] defined transformational leadership as motivating members of the organization to work and perform beyond expectations and emphasizing higher-order needs. In summary, leaders can be defined as transformational leaders if they present the organizational vision to members and positively change member of the organization through smooth interaction with the members.

2.3.3. Participation and Communication

Participation and communication are factors that must be considered simultaneously. Participation is the process through which members of the organization exercise influence and control in the administrative and decision-making process. Therefore, in order for members to participate, communication must occur. Communication is a significantly diverse concept, but if the various definitions offered by researchers are combined, communication stands for the transmission of people's thoughts and meanings with one another. The word communication is derived from the Latin noun "communis," which means common, communality, or sharing. Therefore, in order for such communication to take place, the participation of the subject is essential. A place for participation should be prepared so that information and opinions can be exchanged between the members of an organization. If participation does not occur, it is difficult to communicate in the first place. Such participation and communication are complementary. By sharing information through participation and communication, members can achieve common goals.

2.3.4. Education and Training

Education and training are a planned activity that improves the knowledge and skills of the members of the organization, which enables them to adapt to the organization and perform their duties effectively in pursuit of the organization's goal [78]. Noe (1986) [79] mentioned that education and training is a planned learning experience and is an activity that transforms personal knowledge, skills, and attitudes. Cascio and Award (1981) [80] defined it as a process of acquiring the requisite skills and knowledge to match the demands of a job. Beach (1980) [81] defined education and training as learning the knowledge and skills necessary to achieve the goal. Anthony et al. (1999) [82] defined it as the development of the knowledge, skills, qualities, and behaviors required to improve job performance and competency and facilitate the career development of organizational members. To be more specific, education refers to long-term activities that comprehensively develop an individual's potential, whereas training represents short-term activities of supplementation [83]. However, many scholars have stated that the theoretical distinction between education and training has no distinct advantage for public officials. This is because public officials require both long-term and short-term capabilities to provide better administrative services [84]. Therefore, the integrated concept of "education and training" has been used in previous literature.

2.4. Change Management, Innovative Behavior, and Organizational Innovation

2.4.1. Change Management and Innovative Behavior

According to Locke's goal-setting theory, a goal is set by individuals to consciously influence motivation and behavior. Locke (1968) [85] highlighted that an established goal has an influence on human motivation and behavior, which explains why several studies have been conducted on goal-setting. Loke and Latham (1990, 2006) [86,87] noted that an established goal determines the level of individual effort, provides the basis for motiva-

tion, and ultimately affects organizational behavior. The relationship between goal and behavior can be similarly applied to organizational goals and innovative behavior. Many studies have stated that the clarity of an organizational goal or members' perception of an organizational goal has a positive effect on innovative behavior [34,44,88–95]. However, Kim et al. (2019) [96] analyzed the relationship between clarity of an organizational goal and innovative behavior by studying 2000 public officials at the central government, and the results of the analysis were different for managers and non-managers. For non-managers of grade 5 or lower, it had a positive impact on innovative behavior, whereas for managers of grade 4 and higher, it had no significant impact on innovative behavior.

Transformational leaders present a vision for the future to constituent members of the organization, provide intellectual stimulus so that members of the organization can escape from past customs, and provide support in the process of change accompanied by pain, which makes it possible for members to participate in change. Therefore, it is expected that such a transformational leader will be able to increase the innovative behavior of members of the organization. In order to verify this through prior studies, a number of studies have shown that the perception of the superiors' transformational leadership has a positive effect on innovative behavior. The studies that mentioned the relationship between transformational leadership and innovative behavior are as follows. Burnside (1990) [97] noted that positive encouragement and support from leaders has a positive effect on creative behavioral responses and performance. Scott and Bruce (1994) [98] highlighted that innovative behavior is facilitated by leadership support, trust, and providing subordinates with the autonomy to generate creative ideas. Ryu and Yoo (2008) [99] analyzed the relationship between transformational leadership and innovative behavior among 52 public organizations and noted that transformational leadership has a positive impact on innovative behavior. Previous studies on the relationship between transformational leadership and innovative behavior have indicated that transformational leadership positively affects innovative behavior [34,50,53,54,100–105].

Organizational members have an interactive relationship with one another and are not merely independent subjects. The organizational atmosphere in which various members of the organization can participate in the decision-making process and communicate freely can promote the innovative behavior of the organization members. In order to innovate continuous work practices and avoid inertia, it is possible to promote the innovative behavior of members of the organization by collecting various opinions of members of the organization and developing creative ideas that have been previously conceived. Lin's (2007) [106] study mentioned that smooth communication between members affects personal innovative behavior. A study by Damanpour (1991) [21] noted that the stronger the communication among members within an organization, the better their innovative behavior. There have been many prior studies that have shown that participation has a positive effect on innovative behavior [16,34,58,106–109]. There have also been a number of studies that illustrate that communication has a positive effect on innovative behavior [51,58,60,61,106,110]. Therefore, if participation and communication are facilitated, the members begin to exchange ideas about the direction of the organization's future development, which will result in improved innovative behavior.

Education and training can strengthen the capacity of organizational members and respond to rapidly changing environments. Accordingly, public organizations differ to varying degrees in terms of their functions and goals, but each has their own education and training program. Through education and training, each organization cultivates the human resources needed to create administrative and public services, strives to foster talent within the organization, strengthens their job capabilities, and promotes cooperation and harmony among them. The ability to change the behavior of each member can be enhanced through the development of these abilities. Previous studies on the relationship between education and training and innovative behavior have indicated that education and training positively affect innovative behavior [111–116]. However, Lee et al. (2019) [117] analyzed the impact of education and training on innovative behavior by public officials' grade and found that

the impact of education and training on the innovative behavior of public officials of grade 1 to 4 was not significant. However, it was analyzed that education and training have a positive impact on innovative behavior for public officials of grade 5 to 9.

2.4.2. Change Management and Organizational Innovation

Previous studies found that the organizational goal has a positive effect on organizational innovation. Meroño-Cerdán and López-Nicolás (2017) [39] noted that organizational goals related to innovation have a significant influence on the adoption of organizational innovation. The results mentioned that the organizational mission promotes organizational innovation. Razavi and Attarnezhad (2013) [45] mentioned as a result of researching previous literature that an organizational vision is a way to promote organizational innovation. It was mentioned that the shared organizational vision has a positive effect on organizational innovation. McDonald's (2007) [44] study analyzed the relationship between organizational missions and organizational innovation for non-profit organizations and noted that there is an indirect significant effect between organizational missions and organizational innovation, and Brooks-Rooney et al. (1987) [118] also emphasized that organizational vision is a major factor in determining the type and degree of organizational innovation. In addition, a number of other studies have corroborated the positive effect of organizational goal on organizational innovation [34,39,44–46,90–96,118,119].

In order to succeed in organizational innovation, the organizational leader must be able to clearly and convincingly present the necessity of innovation and the future state of the organization in which the innovation was made, that is, the vision [120]. In addition, leaders must induce feelings of loyalty, trust, and respect in the members of the organization so that they can elicit higher-than-expected efforts and achieve results through changes in attitudes and values. Looking at the relationship between transformational leadership and organizational innovation, most of the preceding studies mention that transformational leadership has a positive effect on organizational innovation, and representative studies related to this are as follows. Jung et al. (2003) [50] noted that transformational leadership has a positive impact on organizational innovation by influencing the perception of organization members about empowerment and innovation in a supportive atmosphere. Gumusluoglu and Ilsev's (2007) [51] study noted that transformational leadership consists of charismatic role modeling, personal consideration, inspirational motivation, and intellectual stimulation, and transformational leadership has a positive impact on organizational innovation. In addition, a number of other studies have corroborated the positive effect of transformational leadership on organizational innovation [34,52–54,59,106,110,121–128].

This study mainly focused on research that indicated that participation and communication have a positive effect on organizational innovation. Having analyzed the relationship between communication and organizational innovation, Monge et al. (1992) [57] highlighted that communication has a significant effect on organizational innovation. Kivimäki et al. (2000) [59] studied the relationship between participation and communication and organizational innovation. They found that participation and communication have a positive effect on organizational innovation. Kontoghioghes et al. (2005) [60] noted that communication has a significant effect on organizational innovation, and a study by Chun (2006) [129] stated that public officials' participation is the most important factor in the techniques for achieving innovation in government organizations. Several other studies have also found that participation and communication have a positive effect on organizational innovation [16,34,36,56–59,62–67,106,109,130–133].

Previous studies have found that education and training have a positive effect on organizational innovation. Garcia-Morales et al. (2008) [46] examined the relationship between organizational learning and organizational innovation and outlined that the former has a significant effect on the latter. Hussain et al. (2013) [69] highlighted that organizational learning has a significant positive relationship with organizational innovation, thereby illustrating the significance of education and training for organizational innovation. Sev-

eral other studies have also demonstrated the positive effect of education and training on organizational innovation [60,70,71,133–137].

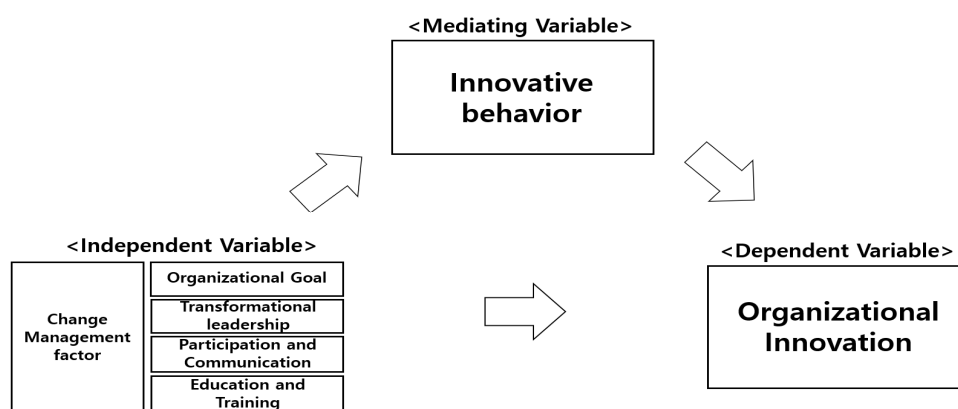
2.4.3. Innovative Behavior and Organizational Innovation

Innovative behavior starts from the individual and spreads to the organization. Therefore, for organizational innovation, it is necessary to search for the factors that induce innovation within individuals and create an environment in which they can express their innovativeness [138]. Jiang et al.'s (2012) [62] study indicated that human resource management (HRM) has a positive effect on employee creativity, which in turn has a positive effect on organizational innovation. Gmusluoglu and Ilsev (2009) [51] noted that transformational leadership positively affects both individual creativity and organizational innovation but that individual creativity does not affect organizational innovation. Glynn (1996) [139] presented a framework regarding the intellectual ability of individuals and organizations to innovate. According to the framework, individual creativity influences organizational innovation. Peters (2014) [140] indicated that innovation-focused HR awareness affects employees' innovative behavior, which ultimately influences organizational innovation. In addition, many other studies have demonstrated that innovative behavior has a positive effect on organizational innovation [141–149].

3. Methodology

3.1. Research Framework

The framework of this study is as follows. Organizational innovation was set as the independent variable. Organizational goal, transformational leadership, participation and communication, and education and training were set as the independent variables. The control variables were sociological and demographic factors (gender, age, educational background, employment period, position, affiliation), work characteristics factors (providing work resources, work autonomy, work performance capabilities), and organizational culture factors (group culture, development culture, hierarchical culture, rational culture), which were organized through the analysis of previous studies. In this study, we examined whether change management factors directly affects organizational innovation or whether it does so indirectly through the innovative behaviors of members. First, we investigated the influence of change management factors on the innovative behavior of the members of an organization. Second, we studied how change management factors affect organizational innovation. Third, we explored whether public officials' innovative behavior mediates the relationship between change management and organizational innovation. Figure 1 below shows the research framework of this study.



Control Variable:

Sociological and demographic factor (Gender, Age, Educational background, Employment period, Position, Affiliation)

Work characteristics factor (Provision of work resources, Work autonomy, Work performance capability)

Organizational Culture factor (Group culture, Development culture, Hierarchical culture, Rational culture)

Figure 1. Research framework (source: authors' elaboration).

3.2. Research Questions and Hypotheses

Previously, research was conducted on how organizational goals, transformational leadership, participation and communication, and education and training independently influence innovative behavior or organizational innovation. Unlike prior research, this study comprehensively analyzed how change management factors for innovation collectively affect the innovative behavior of public officials and ultimately influences organizational innovation. In accordance with this problem consciousness, this study devised three research questions. First, studies analyzing the relationship between change management factors and innovative behavior have indicated that change management factors have a positive effect on innovative behavior [36,44,56,95,98–101,110,130–132,150]. Thus, the research question obtained through the literature review is as follows.

Research Question 1. *Do change management factors positively affect innovative behavior?*

Research Hypothesis 1. *Change management factors (organizational goal, transformational leadership, participation and communication, education and training) will have a positive impact on innovative behavior.*

Research Hypothesis 1-1. *An organizational goal will have a positive impact on innovative behavior.*

Research Hypothesis 1-2. *Transformational leadership will have a positive impact on innovative behavior.*

Research Hypothesis 1-3. *Participation and communication will have a positive impact on innovative behavior.*

Research Hypothesis 1-4. *Education and training will have a positive impact on innovative behavior.*

Second, a number of studies have shown that change management factors have a positive effect on organizational innovation [36,39,44–46,50–53,56–59,62–67,69–71,90–95,110,118,119,130–132,134,151]. Thus, the research question obtained through the literature review is as follows.

Research Question 2. *Do change management factors directly affect organizational innovation?*

Research Hypothesis 2. *Change management factors (organizational goal, transformational leadership, participation and communication, education and training) will have a direct positive impact on organizational innovation.*

Research Hypothesis 2-1. *An organizational goal will have a positive impact on organizational innovation.*

Research Hypothesis 2-2. *Transformational leadership will have a positive impact on organizational innovation.*

Research Hypothesis 2-3. *Participation and communication will have a positive impact on organizational innovation.*

Research Hypothesis 2-4. *Education and training will have a positive impact on organizational innovation.*

Third, many studies have highlighted that change management factors have a positive effect on innovative behavior [36,44,56,95,98–101,110,130–132,150]. In addition, previous studies mentioned that the members' innovative behavior affects their organizational innovation [51,62,141–149,152,153]. Thus, the research question obtained through the literature review is as follows.

Research Question 3. *Does innovative behavior have a mediating effect on the relationship between change management factors and organizational innovation?*

Research Hypothesis 3. *Innovative behavior will mediate the relationship between change management factors (organizational goal, transformational leadership, participation and communication, education and training) and organizational innovation.*

Research Hypothesis 3-1. *Innovative behavior will mediate the relationship between an organizational goal and organizational innovation.*

Research Hypothesis 3-2. *Innovative behavior will mediate the relationship between transformational leadership and organizational innovation.*

Research Hypothesis 3-3. *Innovative behavior will mediate the relationship between participation and communication and organizational innovation.*

Research Hypothesis 3-4. *Innovative behavior will mediate the relationship between education and training and organizational innovation.*

3.3. Variables and Measurement

This study utilized survey data to empirically examine how change management factors have an impact on innovative behavior and, consequently, organizational innovation. Research has been conducted on the influential factors with respect to governmental innovation to analyze the effect of the majority on the innovative behavior of organizational members. However, since government innovation resembles organizational innovation, empirical research on the factors influencing organizational innovation is needed. Therefore, this study intends to examine the effects of change management factors on innovative behavior and organizational innovation. The components and measurement methods of independent variables, mediating variables, dependent variables, and control variables that are required to examine the impact are as follows. First, an exploratory factor analysis was performed on the change management factors, which are independent variables. The analysis facilitated the identification of four factors: organizational goal, transformational leadership, participation and communication, and education and training. Organizational goal was measured using a 5-point Likert scale for four questions related to it. Transformational leadership was measured using a 5-point Likert scale on the four questions related to it. In addition, seven questions related to participation and communication and three questions related to education and training were measured using a 5-point Likert scale. Second, innovative behavior—which is the mediating variable—was measured using a 5-point Likert scale for two questions related to it, and factor analysis was conducted on two questions. Third, organizational innovation—a dependent variable—was measured using a 5-point Likert scale for three questions related to it, and factor analysis was performed on three questions. Fourth, the control variables consisted of sociological and demographic factors, work characteristics factors, and organizational culture factors. The sociological and demographic factors were organized into gender, age, educational background, employment period, position, affiliation, and employment type. The work characteristics factors were organized by into provision of work resources, work autonomy, and work performance capabilities. [Appendix A] shows information about detailed variable measurements.

3.4. Analysis Method and Data

In this study, we used Hayes' Process Macro to verify the mediating effects between variables. Usually, mediating effects can be analyzed by regression analysis and structural equation modeling (SEM). The Process Macro technique proposed by Hayes (2013) [154] is a new regression that can compensate for the disadvantages of the existing mediating effects

analysis method of Baron and Kenny (1986) [155], Sobel Test (1982) [156], and structural equation modeling. Baron and Kenny's (1986) [155] mediating effect verification method has been criticized for indirectly predicting it through three-step causal reasoning, which does not directly verify the mediating effect. In addition, the Sobel test for measuring the magnitude of mediating effects assumes the normality of the sample distribution when verifying the significance [157,158]. On the other hand, SEM analysis has the advantage of using confidence intervals through free and verifiable bootstrapping under normal distribution assumptions [158]. However, unlike regression analysis, SEM also has the disadvantage of using only continuous variables. The Process Macro introduced by Hayes (2013) [154] can directly infer the magnitude of mediating effects through bootstrapping and has the advantage of conducting a regression analysis without assuming a normal distribution. Therefore, many existing studies at home and abroad use Process Macro as a mediating effect analysis method [53,151,159–166]. This study measures the mediating effect of innovative behavior in the relationship between change management and organizational innovation using Hayes' Process Macro [154]. In this study, we used the "Model = 4" process macro.

This study uses the Public Employee Perception Survey Data 2018 from the Korea Institute of Public Administration (This article makes use of research material produced by the Korea Institute of Public Administration (KIPA), and it has been authorized for use according to KIPA's regulations on the ownership and the use of said research material.). The independent variables, mediating variables, dependent variables, and control variables used in this study were all measured through Public Employee Perception Survey Data 2018. A total of 4000 people were surveyed via email. Sampling was conducted through probability samples for public officials belonging to 46 central government departments and 17 regional governments in Korea. The survey period is one year from 1 August 2017 to 31 July 2018, and the survey was conducted from August to September 2018. These data are nationally approval statistics data approved by statistics Korea in 2018.

4. Finding and Discussion

4.1. Descriptive Statistics

The general status of the 4000 respondents who answered the questionnaire was divided into subcategories such as institutional status, gender, age, educational background, employment period, and position. Looking at the characteristics of demographics, more females (64.5%) than males (35.5%) participated. With respect to age, those in their 40s (38.4%) were the largest section, followed by those in their 30s (30.8%), those who were 50 or older (22.9%), and lastly those in their 20s (8.0%). With respect to educational background, college graduates accounted for 67.2% of the total respondents, followed by Master's post-graduates (19.3%), junior college graduates (6.7%), high school graduates (4.1%), and doctoral graduates (2.7%). The most common employment period of the respondents was 26+ years (21.7%), followed by 11 to 15 years (19.9%), 5 years or less (17.8%), 6 to 10 years (14.8%), 21 to 25 years (13.4%), and 16 to 20 years (12.6%). The participants were from ranks 6 to 7 (59.5%), 5 (22.6%), 8 to 9 (10.2%), and 1 to 4 (7.8%). Table 2 presents general information regarding the 4000 central government and local government public officials who responded to the survey.

4.2. Validity and Reliability Analysis

In this study, exploratory factor analysis and reliability analysis were performed to test the validity and reliability of measurements. In the factor analysis, a principal component factor analysis was performed using the Varimax rotation, which is a right-angle rotation with Kaiser rule. In the reliability analysis, reliability was analyzed by the internal consistency method that calculates the Cronbach's alpha coefficient (Lim et al., 2016). First, the factor analysis on the change management factors established the feasibility of measuring organizational goal, transformational leadership, participation and communication, and education and training as factors. The Cronbach's alpha coefficient

was 0.877 for organizational goal, 0.916 for participation and communication, 0.936 for transformational leadership, and 0.799 for education and training. Table 3 below shows the analysis results.

Table 2. Distribution of major explanatory variables (source: authors' elaboration).

	Division	Cases (Person)	Percentage (%)
	Aggregate	4000	100.0
Affiliation	Central department	2000	50.0
	Local government	2000	50.0
Gender	male	1422	35.6
	female	2578	64.5
Age	20 s	318	8.0
	30 s	1232	30.8
	40 s	1536	38.4
	Over 50 s	914	22.9
Educational background	Below high school graduation	163	4.1
	College graduate	266	6.7
	University (4 years)	2689	67.2
	Graduate Master	773	19.3
	Graduate Ph.D.	109	2.7
Employment period	5 years or less	711	17.8
	6–10 years	590	14.8
	11–15 years	795	19.9
	16–20 years	502	12.6
	21–25 years	534	13.4
	Over 26 years	868	21.7
Position	1–4 rank	291	9.3
	5 rank	654	21.0
	6–7 rank	1823	58.5
	8–9 rank	349	11.2

Table 3. Validity and reliability analysis 1: change management (source: authors' elaboration).

Variable Name	Measurement Item (Question)	Factor Load Values in Varimax Rotational Analysis				Commonality	Cronbach's Alpha
Organizational goal	(Question1)	0.096	0.140	0.792	0.179	0.689	0.877
	(Question2)	0.221	0.162	0.846	0.141	0.810	
	(Question3)	0.324	0.215	0.779	0.174	0.788	
	(Question4)	0.349	0.169	0.709	0.151	0.676	
Participation and communication	(Question5)	0.731	0.304	0.247	0.149	0.710	0.916
	(Question6)	0.776	0.262	0.158	0.141	0.715	
	(Question7)	0.785	0.241	0.173	0.121	0.719	
	(Question8)	0.785	0.239	0.122	0.116	0.702	
	(Question9)	0.696	0.151	0.235	0.144	0.584	
	(Question10)	0.740	0.263	0.185	.133	0.669	
	(Question11)	0.684	0.195	0.210	0.145	0.572	

Table 3. Cont.

Variable Name	Measurement Item (Question)	Factor Load Values in Varimax Rotational Analysis				Commonality	Cronbach's Alpha
Transformational leadership	(Question12)	0.322	0.807	0.199	0.134	0.812	0.936
	(Question13)	0.312	0.844	0.179	0.141	0.862	
	(Question14)	0.303	0.841	0.182	0.133	0.849	
	(Question15)	0.308	0.822	0.174	0.171	0.829	
Education and training	(Question16)	0.071	0.082	0.182	0.817	0.713	0.799
	(Question17)	0.273	0.188	0.131	0.777	0.731	
	(Question18)	0.190	0.158	0.194	0.791	0.725	
Variance Explanation (%)		25.879	18.546	16.331	12.318		
Cumulative Explanation (%)		25.879	44.424	60.755	73.073		
KMO (Kaiser-Meyer-Olkin)							0.939
Bartlett's Test of Sphericity					Chi-Square	50,787.710	
					df(<i>p</i>)	153	
					<i>p</i> -Value	0.000	

Second, the factor analysis on the measure of the work characteristics factors established the validity of measuring provision of work performance resources, work autonomy, and work performance capability as factors. The Cronbach's alpha coefficient was 0.801 for provision of work performance resources, 0.787 for work autonomy, and 0.747 for work performance capability to establish reliability for measuring as factors. Table 4 below shows the analysis results.

Table 4. Validity and reliability analysis 2: work characteristics (source: authors' elaboration).

Variable Name	Measurement Item (Question)	Factor Load Values in Varimax Rotational Analysis			Commonality	Cronbach's Alpha
Provision of work performance resources	(Question 24)	0.733	0.298	−0.028	0.627	0.801
	(Question 25)	0.878	0.173	0.047	0.803	
	(Question 26)	0.835	0.182	0.091	0.738	
Work autonomy	(Question 27)	0.259	0.757	0.187	0.676	0.787
	(Question 28)	0.252	0.798	0.086	0.707	
	(Question 29)	0.146	0.839	0.074	0.730	
Work performance capability	(Question 30)	−0.018	0.017	0.820	0.672	0.747
	(Question 31)	0.172	0.206	0.776	0.674	
	(Question 32)	−0.020	0.095	0.821	0.683	
Variance explanation (%)		24.310	23.515	22.293		
Cumulative explanation (%)		24.310	47.825	70.118		
KMO (Kaiser-Meyer-Olkin)						0.797
Bartlett's Test of Sphericity		Chi-Square				12165.378
		df (<i>p</i>)				36
		<i>p</i> -Value				0.000

Third, the factor analysis on the measure of the organizational culture factors established the feasibility of measuring rational culture, development culture, group culture, and hierarchical culture as factors. The Cronbach's alpha coefficient was 0.757 for rational culture,

0.811 for development culture, 0.812 for group culture, and 0.757 for hierarchical culture to establish reliability for measuring as factors. Table 5 below shows the analysis results.

Table 5. Validity and reliability analysis 3: organizational culture (source: authors' elaboration).

Variable Name	Measurement Item (Question)	Factor Load Values in Varimax Rotational Analysis				Commonality	Cronbach's Alpha
Rational culture	(Question 33)	0.146	0.844	0.221	0.184	0.816	0.757
	(Question 34)	0.239	0.848	0.055	0.166	0.807	
Development culture	(Question 35)	0.859	0.284	0.199	0.099	0.868	0.811
	(Question 36)	0.792	0.144	0.379	0.192	0.828	
Group culture	(Question 37)	0.472	0.207	0.701	0.209	0.801	0.812
	(Question 38)	0.263	0.137	0.850	0.257	0.876	
Hierarchical culture	(Question 39)	0.130	0.130	0.406	0.771	0.793	0.757
	(Question 40)	0.146	0.237	0.093	0.887	0.873	
Variance explanation (%)		22.158	20.848	20.271	19.988		
Cumulative explanation (%)		22.148	43.006	63.277	83.265		
KMO (Kaiser–Meyer–Olkin)							0.853
Bartlett's Test of Sphericity		Chi-Square				14974.519	
		df(p)				28	
		p-Value				0.000	

4.3. Results of Hayes' Process Macro (2013)

In order to examine the relationship between change management and organizational innovation and how public officials' innovative behavior mediates the relationship between the two, a mediation-regression analysis was conducted through the fourth Hayes' Process Macro model. Table 6 is the result of the mediating effect verification that utilized Hayes' Process Macro.

Table 6. Mediation effect verification using Process Macro (model = 4) (source: authors' elaboration).

[illegible]

Table 6. Cont.

Independent Variable	Dependent Variable	β	se	<i>t</i> Value	<i>p</i>	LLCI	ULCI
Organizational goal	Organizational innovation	0.2016	0.0115	17.4553	0.0000	0.1789	0.2242
Tranformational leadership		0.2035	0.0108	18.8306	0.0000	0.1823	0.2247
Participation and communication		0.5841	0.0127	46.2671	0.0000	0.5635	0.6134
Education and training		0.1233	0.0106	11.6248	0.0000	0.1025	0.1440
$R^2 = 0.6798$, $F = 290.7028$ ($p = 0.0000$), Direct Effect of Independent Variables							

Table 6 shows the total effect of change management factors on innovative behavior and organizational innovation. It was found that organizational goal, transformational leadership, participation and communication, and education and training have a positive effect on both organizational innovation and innovative behavior. Even with respect to the total effect, it was noted that change management factors have a positive effect and that participation and communication has the largest relative impact. A summary of the results of this multiple regression analysis, the direct effects of organizational goal, transformational leadership, participation and communication, training and organizational innovation, and the indirect effects of individual innovation behavior are presented in the following Tables 7–10.

Table 7. Indirect effect verification of the mediation of members' innovative behavior between organizational goal and organizational innovation (source: authors' elaboration).

Division	Effect	Boot SE	Boot LLCI	Boot ULCI
Total effect	0.2082	0.0115	0.1857	0.2307
Direct effect	0.2016	0.0115	0.1789	0.2242
Indirect effect	0.0067	0.0021	0.0029	0.0110

LLCI = lower limit within 95% confidence interval of boot indirect effect. ULCI = upper bound within 95% confidence interval of boot indirect effect.

Table 8. Indirect effect verification of the mediation of members' innovative behavior between transformational leadership and organizational innovation (source: authors' elaboration).

Division	Effect	Boot SE	Boot LLCI	Boot ULCI
Total effect	0.2066	0.0108	0.1854	0.2277
Direct effect	0.2035	0.0108	0.1823	0.2247
Indirect effect	0.0031	0.0012	0.0011	0.0057

LLCI = lower limit within 95% confidence interval of boot indirect effect. ULCI = upper bound within 95% confidence interval of boot indirect effect.

Table 9. Indirect effect verification of the mediation of members' innovative behavior between participation and communication and organizational innovation (source: authors' elaboration).

Division	Effect	Boot SE	Boot LLCI	Boot ULCI
Total effect	0.5885	0.0127	0.5635	0.6134
Direct effect	0.5841	0.0127	0.5591	0.6090
Indirect effect	0.0044	0.0015	0.0018	0.0078

LLCI = lower limit within 95% confidence interval of boot indirect effect. ULCI = upper bound within 95% confidence interval of boot indirect effect.

Table 10. Indirect effect verification of members' innovative behavior between the education and training and organizational innovation factors (source: authors' elaboration).

Division	Effect	Boot SE	Boot LLCI	Boot ULCI
Total effect	0.1233	0.0106	0.1025	0.1440
Direct effect	0.1175	0.0107	0.0966	0.1384
Indirect effect	0.0057	0.0017	0.0026	0.0094

LLCI = lower limit within 95% confidence interval of boot indirect effect. ULCI = upper bound within 95% confidence interval of boot indirect effect.

The above Table 7 shows the magnitude and significance of the direct effect of organizational goal on organizational innovation and the indirect effect of members' innovative behavior. The bootstrap confidence interval of the total effect was significant because it did not contain 0, and the magnitude of the effect was 0.2082. The direct effect of an organizational goal on organizational innovation was significant because the bootstrap confidence interval did not include 0, and the magnitude of the effect was 0.2016. In addition, the effect of organizational goal on organizational innovation through the mediation of members' innovative behavior was also significant because the bootstrap confidence interval did not include 0 and the magnitude of the effect was 0.067. Thus, the results revealed that organizational goal primarily directly influences organizational innovation.

Table 8 shows the magnitude and significance of the direct effect of transformational leadership on organizational innovation and the indirect effect of members' innovative behavior. The bootstrap confidence interval of the total effect is significant because it did not contain 0, and the magnitude of the effect was 0.2066. The direct effect of transformational leadership on organizational innovation was significant because the bootstrap confidence interval did not include 0, and the magnitude of the effect was 0.2035. In addition, the effect of transformational leadership on organizational innovation through the mediating effect of members' innovative behavior was significant because the bootstrap confidence interval did not include 0, and the magnitude of the effect was 0.031. Thus, the results revealed that transformational leadership mainly directly influences organizational innovation.

Table 9 shows the magnitude and significance of the direct effect of participation and communication on organizational innovation and the indirect effect of members' innovative behavior. The bootstrap confidence interval of the total effect was significant because it did not contain 0, and the magnitude of the effect was 0.5885. Among the total effects, the direct effect of participation and communication on organizational innovation was significant because the bootstrap confidence interval did not contain 0, and the magnitude of the effect was 0.5841. In addition, the effect of participation and communication on organizational innovation through the mediating effect of members' innovative behavior was significant because the bootstrap confidence interval did not contain 0, and the magnitude of the effect was 0.0044.

Table 10 shows the magnitude and significance of the direct effect of education and training on organizational innovation and the indirect effect of mediating members' innovative behavior. The bootstrap confidence interval of the total effect was significant because it does not contain 0, and the magnitude of the effect was 0.1233. The direct effect of education and training on organizational innovation was significant because the bootstrap confidence interval did not include 0, and the magnitude of the effect was 0.1175. In addition, the effect of education and training on organizational innovation through the mediating effect of members' innovative behavior was significant because the bootstrap confidence interval does not contain 0, and the magnitude of the effect was 0.0057.

4.4. Hypothesis Verification Results

This study examined the effects of organizational goal, transformational leadership, participation and communication, and education and training on members' innovative behavior and organizational innovation using Hayes' Process Macro (model 4). The results

of verifying the hypothesis of this study through the results of the analysis are shown in Table 11 below.

Table 11. Hypothesis verification table (source: authors' elaboration).

Division	Contents	Adoption
Hypothesis 1-1.	<i>Organizational goal will have a significant positive impact on innovative behavior.</i>	Supported
Hypothesis 1-2.	<i>Transformational leadership will have a significant positive impact on innovative behavior.</i>	Supported
Hypothesis 1-3.	<i>Communication and participation will have a significant positive impact on innovative behavior.</i>	Supported
Hypothesis 1-4.	<i>Education and training will have a significant positive impact on innovative behavior.</i>	Supported
Hypothesis 2-1.	<i>Organizational goal will have a significant positive impact on organizational innovation.</i>	Supported
Hypothesis 2-2.	<i>Transformational leadership will have a significant positive impact on organizational innovation.</i>	Supported
Hypothesis 2-3.	<i>Communication and participation will have a significant positive impact on organizational innovation.</i>	Supported
Hypothesis 2-4.	<i>Education and training will have a significant positive impact on organizational innovation.</i>	Supported
Hypothesis 3-1.	<i>Organizational goal will increase organizational innovation by mediating the innovative behavior of members.</i>	Supported
Hypothesis 3-2.	<i>Transformational leadership will increase organizational innovation by mediating the innovative behavior of members.</i>	Supported
Hypothesis 3-3.	<i>Communication and participation will increase organizational innovation by mediating the innovative behavior of members.</i>	Supported
Hypothesis 3-4.	<i>Education and training will increase organizational innovation by mediating the innovative behavior of members.</i>	Supported

5. Conclusions

Due to the rapid environmental change in the era of the fourth industrial revolution, the importance of government innovation to cope with it is growing day by day. In this study, we looked at how organizational goal, transformational leadership, education and training, participation, and communication, which are techniques for change management, are affecting government organizational innovation. It also looked at the instrumental role of public officials' innovative behavior in order for the government to adapt to the rapid environment. The analysis results of the relationship between change management, innovative behavior, and organizational innovation are summarized as follows.

First, recognition of an organizational goal was found to have a positive effect on both organizational members' innovation behavior and organizational innovation.

Second, it was found that the perception of transformational leadership had a positive effect on both the organizational members' innovative behavior and organizational innovation.

Third, participation and communication were found to have a positive effect on both the innovation behavior and organizational innovation of the organization members.

Fourth, it was found that education and training had a positive effect on both the organizational members' innovation behavior and organizational innovation.

Fifth, organizational members' innovation behavior mediated the relationship between change management (organizational goal, transformational leadership, participation and communication, education and training) and organizational innovation.

Effective change management (organizational goal, transformational leadership, education training, participation and communication) for public organizations can change

the characteristics of members' implementation of change and ultimately achieve organizational innovation. Conversely, if change management activities are not carried out effectively, members will be more immune to change, increasing their critical tendency to change, and increasing performance through future changes will be more difficult. The policy implications that this study would like to highlight are as follows.

First, change management is very important in order to effectively drive the innovative behavior of organizational members. Change management can achieve not only the innovative behavior of organizational members but also ultimately organizational innovation.

Second, we found that innovative behavior is an important parameter that mediates between change management and organizational innovation. The innovative behavior of organizational members is essential in a rapidly changing environment. Members of a public organization must take into account the importance of innovative behavior and implement it.

Third, the magnitude of the impact of participation and communication on innovative behavior and organizational innovation was relatively large, and the size is much larger than other factors. Therefore, public organizations must recognize and implement the importance of participation and communication.

The findings on the relationship between change management factors, innovative behavior, and organizational innovation in this study are expected to give policy implications in planning and implementing innovation policies (programs) to promote government organizational innovation and innovative behavior. In addition, this study has academic implications in that it empirically verified the effectiveness of change management techniques to promote organizational innovation and innovative behavior.

Limitation of this Study

We analyzed the relationship between change management, innovative behavior, and organizational innovation of government organizations and made theoretical considerations on the direction in which government organizational innovation should proceed through the analysis results. However, this study has a limitation that it failed to discuss the procedural aspects of change management within the organization for organizational change. In addition, conducting analysis with panel data allows us to analyze the relationship between change management, innovative behavior, and organizational innovation in detail, but this study has limitations in data using only 2018 data.

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Appendix A

Table A1. Main variables.

Variable	Item
Organizational innovation	(question 1) Our organization is flexible and responds promptly to change.
	(question 2) Our institution tolerates some risk for innovation.
	(question 3) In our institution, change usually has a positive effect.
Organizational goal	(question 4) I clearly know the organizational goals of our institution.
	(question 5) Priorities between organizational goals are clear in our institution.
	(question 6) Organizational objectives provide clear guidance for the performance of the task at hand.
	(question 7) Objectively measure the achievement of our institution's goals over the past year.
Transformational leadership	(question 8) My boss gives me a solid vision for the future.
	(question 9) My boss motivates me to work hard.
	(question 10) My boss encourages me to work from a new perspective.
	(question 11) My boss helps me develop myself.
Participation and communication	(question 12) In our institution, decisions are made in a fair way.
	(question 13) Our organization takes into account the opinions of all employees in making any decisions.
	(question 14) We can ask for clarification or additional information about our decision making.
	(question 15) Employees can object to decisions made in our institution.
	(question 16) In our institution, cooperation between departments is generally smooth when business cooperation is required.
	(question 17) In our institution, communication between the top and bottom (vertical) is smooth in performing the department's work.
Education and training	(question 18) In our institution, communication between employees (horizontal) is smooth in performing departmental tasks.
	(question 19) I am constantly developing myself to improve my ability to perform.
	(question 20) I can have adequate training/capacity development activities if I need to do my job.
Innovative behavior	(question 21) The recent training/capacity development activities helped me in my job performance.
	(question 22) I try to create/adapt new and creative ways of doing business.
	(question 23) I develop new ideas to solve problems that arise during my work.
Gender	0. male, 1. female
Age (standard age: 20 s)	30 s, 40 s, 50 s or older
Educational background (standard level: High school graduate or less)	2 years college graduate or above \approx 4 years university graduate, Graduate (Master) or higher
Tenure (Standard Tenure: 10 years or less)	11–20 years, Over 21 years
Position (Standard position: 8–9)	sixth–seventh rank, fifth rank, first–fourth rank
Affiliation	0. Central department
	1. Local government

Table A1. Cont.

Variable	Item
Provision of work performance resources	(question 24) I am adequately provided with human resources such as manpower needed to perform my job.
	(question 25) I am adequately provided with material resources, such as budget for work.
	(question 26) I am properly provided with information resources such as information and IT facilities necessary for the performance of work.
Work autonomy	(question 27) I have a choice about the way/procedure of work.
	(question 28) I can control work speed/deadline.
	(question 29) I can determine the order of work/priority.
Work performance capability	(question 30) My work requires high competence.
	(question 31) My current job is consistent with my capabilities.
	(question 32) My job competencies are superior to member of private companies (large firms) who perform similar tasks.
Rational culture	(question 33) Our organization emphasizes planning, goal control, and goal achievement.
	(question 34) Our organization values competitiveness/performance/result.
Development culture	(question 35) Our organization emphasizes creativity/innovation/challenge.
	(question 36) We value employees' intuition/insight and growth/resource acquisition to solve new challenges.
Group culture	(question 37) Our organization emphasizes participation/cooperation/trust and member development.
	(question 38) Our organization values organizational fraud/teamwork.
Hierarchical culture	(question 39) Our organization emphasizes stability/consistency/compliance.
	(question 40) Our organization places great emphasis on documentation, accountability, control, and information management.

References

- Kim, S.W. Cases of Organizational Culture and Human Resource Development in Response to the 4th Industrial Revolution. *Hum. Resour. Dev. Rev.* **2016**, *19*. [\[CrossRef\]](#)
- Kim, S.N. *Future Organization 4.0*; The Quest: Seoul, Korea, 2018.
- Lewin, K. *Field Theory in Social Science*; Harper & Row: New York, NY, USA, 1947.
- Brwon, W.B.; Morberg, D.J. *Organization Theory and Management a Macro Approach*; Wiley and Son: New York, NY, USA, 1986.
- Gardner, D.M.; Strebel, P. Breakpoints: How Managers Exploit Radical Business Change. *J. Mark.* **1993**, *57*, 152. [\[CrossRef\]](#)
- Duck, J.D. Managing change: The art of balancing. *Harv. Bus. Rev.* **1993**, *71*, 109–118.
- Kettinger, W.J.; Grover, V. Special Section: Toward a Theory of Business Process Change Management. *J. Manag. Inf. Syst.* **1995**, *12*, 9–30. [\[CrossRef\]](#)
- Bancroft, N.; Seip, H.; Sprengel, A. *Implementing SAP R/3: How to Introduce a Large System Into a Large Organization*; Manning: Greenwich, CT, USA, 1998.
- PROSCI. ADKAR®Change Management Model. 1999. Available online: <https://www.prosci.com/adkar> (accessed on 14 February 2021).
- Moran, J.W.; Brightman, B.K. Leading organizational change. *J. Work. Learn.* **2000**, *12*, 66–74. [\[CrossRef\]](#)
- Castle, D.K.; Sir, M. Organization development: A framework for successful information technology assimilation. *Organ. Dev. J.* **2001**, *19*, 59.
- Anderson, D.; Anderson, L.A. *Beyond Change Management: Advanced Strategies for Today's Transformational Leaders*; John Wiley & Sons: San Francisco, CA, USA, 2002.
- Armstrong, M.; Baron, A. *Managing Performance: Performance Management in Action*; CIPD publishing: London, UK, 2005.
- Kotter, J.P. Leading change: The eight steps to transformation. In *The Leader's Change Handbook*; Conger, J., Spreitzer, G., Lawler, E., Eds.; Jossey-Bass: San Francisco, CA, USA, 1999.
- Wanner, M.F. Integrated change management. In Proceedings of the PMI®Global Congress 2013—EMEA, Istanbul, Turkey, 22–24 April 2013; Project Management Institute: Newtown Square, PA, USA.

16. Bonacci, I.; Mazzitelli, A.; Morea, D. Evaluating Climate between Working Excellence and Organizational Innovation: What Comes First? *Sustainability* **2020**, *12*, 3340. [[CrossRef](#)]
17. Jørgensen, T.B.; Bozeman, B. Public values: An inventory. *Adm. Soc.* **2007**, *39*, 354–381. [[CrossRef](#)]
18. Bozeman, B. Technology transfer and public policy: A review of research and theory. *Res. Policy* **2000**, *29*, 627–655. [[CrossRef](#)]
19. Rainey, H.G.; Bozeman, B. Comparing public and private organizations: Empirical research and the power of the a priori. *J. Public Adm. Res. Theory* **2000**, *10*, 447–470. [[CrossRef](#)]
20. Bozeman, B.; Kingsley, G. Risk culture in public and private organizations. *Public Adm. Rev.* **1998**, 109–118. [[CrossRef](#)]
21. Damanpour, F. Organizational innovation: A meta-analysis of effects of determinants and moderators. *Acad. Manag. J.* **1991**, *34*, 555–590.
22. Jones, G.R. *Organizational Theory, Design, and Change*; Pearson: Upper Saddle River, NJ, USA, 2013.
23. Demircioglu, M.A. Organizational Innovation. In *Global Encyclopedia of Public Administration, Public Policy, and Governance*; Springer: Bloomington, IN, USA, 2016; pp. 1–5.
24. West, M.A.; Farr, J.L. (Eds.) *Innovation and Creativity at Work: Psychological and Organizational Strategies*; John Wiley: Hoboken, NJ, USA, 1990.
25. Van de Ven, A.H. Central problems in the management of innovation. *Manag. Sci.* **1986**, *32*, 590–607. [[CrossRef](#)]
26. Katz, D.; Kahn, R.L. *The Social Psychology of Organizations*; Wiley: New York, NY, USA, 1978; Volume 2, p. 528.
27. Kanter, R.M. When a Thousand Flowers Bloom: Structural, Collective, and Social Conditions for Innovation in Organization. *Res. Organ. Behav.* **1988**, *10*, 169–211.
28. Amabile, T. How to Kill Creativity. *Harv. Bus. Rev.* **1998**, *76*, 76–87.
29. Levy, A. Second-order planned change: Definition and conceptualization. *Organ. Dyn.* **1988**, *15*, 19–23. [[CrossRef](#)]
30. Greiner, L.E. Red flags in organization development. *Bus. Horiz.* **1972**, *15*, 17–24. [[CrossRef](#)]
31. Kotter, J.P.; Schlesinger, L.A. Choosing Strategies for Change. *Harv. Bus. Rev.* **1979**, *57*, 106–114.
32. Voelpel, S.C.; Leibold, M.; Mahmoud, K.M. The organizational fitness navigator: Enabling and measuring organizational fitness for rapid change. *J. Chang. Manag.* **2004**, *4*, 123–140. [[CrossRef](#)]
33. Whelan-Berry, K.S.; Somerville, K.A. Linking change drivers and the organizational change process: A review and synthesis. *J. Chang. Manag.* **2010**, *10*, 175–193. [[CrossRef](#)]
34. Fernandez, S.; Rainey, H.G. Managing Successful Organizational Change in the Public Sector. *Public Adm. Rev.* **2006**, *66*, 168–176. [[CrossRef](#)]
35. Kotter, J.P.; Cohen, D.S. Creative ways to empower action to change the organization: Cases in point. *J. Organ. Excel.* **2002**, *22*, 73–82. [[CrossRef](#)]
36. Tushman, M.; Nadler, D. Organizing for innovation. *Calif. Manag. Rev.* **1986**, *28*, 74–92. [[CrossRef](#)]
37. Kotter, J.P.; Price, D. Leading Change: Why Transformation Efforts Fail. *Princ. Pr. Chang.* **2009**, *73*, 113–123. [[CrossRef](#)]
38. Recardo, R.J. Overcoming resistance to change. *Natl. Prod. Rev.* **1995**, *14*, 5. [[CrossRef](#)]
39. Meroño-Cerdan, A.-L.; Lopez-Nicolas, C. Innovation objectives as determinants of organizational innovations. *Innovation* **2016**, *19*, 208–226. [[CrossRef](#)]
40. Dale, B.G.; Cooper, C.L. *Total Quality and Human Resources: An Executive Guide*; Blackwell Business: Oxford, UK, 1992.
41. Davenport, T.H. Need radical innovation and continuous improvement? Integrate process reengineering and TQM. *Plan. Rev.* **1993**, *21*, 6–12. [[CrossRef](#)]
42. Stoddard, D.B.; Jarvenpaa, S.L. Business Process Redesign: Tactics for Managing Radical Change. *J. Manag. Inf. Syst.* **1995**, *12*, 81–107. [[CrossRef](#)]
43. Caron, J.R.; Jarvenpaa, S.L.; Stoddard, D.B. Business Reengineering at CIGNA Corporation: Experiences and Lessons Learned from the First Five Years. *Mis. Q.* **1994**, *18*, 233. [[CrossRef](#)]
44. McDonald, R.E. An Investigation of Innovation in Nonprofit Organizations: The Role of Organizational Mission. *Nonprofit Volunt. Sect. Q.* **2007**, *36*, 256–281. [[CrossRef](#)]
45. Razavi, S.H.; Attarnezhad, O. Management of organizational innovation. *Int. J. Bus. Soc. Sci.* **2013**, *4*, 226–232.
46. García-Morales, V.J.; Llorens-Montes, F.J.; Verdú-Jover, A.J. Antecedents and consequences of organizational innovation and organizational learning in entrepreneurship. *Ind. Manag. Data Syst.* **2006**, *106*, 21–42. [[CrossRef](#)]
47. Chang, G.W.; Kim, S.E. Factors Affecting Government Innovation: An Analysis of Consolidated Agencies; Korean Society and Public Administration. *Korean Soc. Public Adm.* **2007**, *17*, 17–41.
48. Goleman, D.; McKee, A.; Boyatzis, R.; Billsberry, J. Primal Leadership: The Hidden Driver of Great Performance. *Discov. Lead.* **2009**, *79*, 63–72. [[CrossRef](#)]
49. Phelan, D.J. Crossing the Generations: Learning to Lead Across the Leadership Life Cycle. *Community Coll. J. Res. Pract.* **2005**, *29*, 783–792. [[CrossRef](#)]
50. Jung, D.I.; Chow, C.; Wu, A. The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *Lead. Q.* **2003**, *14*, 525–544. [[CrossRef](#)]
51. Gumusluoglu, L.; Ilsev, A. Transformational leadership, creativity, and organizational innovation. *J. Bus. Res.* **2009**, *62*, 461–473. [[CrossRef](#)]
52. Khan, M.A.; Chaudhry, H.A.I.S.; Khan, M.F.A. Impact of organizations mission an encouraging factor for overall performance. *Afr. J. Bus. Manag.* **2010**, *4*, 2652–2658.

53. Mavros, Y.; Gates, N.J.; Wilson, G.C.; Jain, N.; Meiklejohn, J.; Brodaty, H.; Wen, W.; Singh, N.; Baune, B.T.; Suo, C.; et al. Mediation of Cognitive Function Improvements by Strength Gains After Resistance Training in Older Adults with Mild Cognitive Impairment: Outcomes of the Study of Mental and Resistance Training. *J. Am. Geriatr. Soc.* **2016**, *65*, 550–559. [\[CrossRef\]](#)
54. Wang, T.K.; Ju, H.J.; Jang, B.J. The Influencing Factors on Innovation of Local Governments: Focusing on the Mod-erating Effect of the External-Focus Culture. *Korea Local Adm. Rev.* **2017**, *31*, 199–220.
55. Argyris, C. *Organization and Innovation*, Irwin; R. D. Irwin: Burr Ridge, IL, USA, 1970.
56. Klein, S.M. A management communication strategy for change. *J. Organ. Chang. Manag.* **1996**, *9*, 32–46. [\[CrossRef\]](#)
57. Monge, P.R.; Cozzens, M.D.; Contractor, N.S. Communication and Motivational Predictors of the Dynamics of Organizational Innovation. *Organ. Sci.* **1992**, *3*, 250–274. [\[CrossRef\]](#)
58. Kivimäki, M.; Lämsäsalmi, H.; Elovainio, M.; Heikkilä, A.; Lindström, K.; Harisalo, R.; Puolimatka, L. Communication as a determinant of organizational innovation. *R&D Manag.* **2000**, *30*, 33–42.
59. Kontoghiorghes, C.; Awbre, S.M.; Feurig, P.L. Examining the relationship between learning organization charac-teristics and change adaptation, innovation, and organizational performance. *Hum. Resour. Dev. Q.* **2005**, *16*, 185–212. [\[CrossRef\]](#)
60. Oh, S.Y. The roles of knowledge acquisition activities and organizational communication on innovation: Focusing on the mediation effect of organizational trust to the subjects of power. *Korean J. Hum. Resour. Dev.* **2013**, *15*, 101–123.
61. Kang, S.; Um, H.; Kim, M.S. The Influence of Employee Well-being on Organizational Innovativeness and Performance. *J. Korea Acad. Coop. Soc.* **2015**, *16*, 4576–4585. [\[CrossRef\]](#)
62. Jiang, J.; Wang, S.; Zhao, S. Does HRM facilitate employee creativity and organizational innovation? A study of Chinese firms. *Int. J. Hum. Resour. Manag.* **2012**, *23*, 4025–4047. [\[CrossRef\]](#)
63. Seeck, H.; Diehl, M.-R. A literature review on HRM and innovation – taking stock and future directions. *Int. J. Hum. Resour. Manag.* **2017**, *28*, 913–944. [\[CrossRef\]](#)
64. Kimberly, J.R.; Evanisko, M.J. Organizational innovation: The influence of individual, organizational, and contextual factors on hospital adoption of technological and administrative innovations. *Acad. Manag. J.* **1981**, *24*, 689–713.
65. Peng, J.; Zhang, G.; Fu, Z.; Tan, Y. An empirical investigation on organizational innovation and individual creativity. *Inf. Syst. E-Bus. Manag.* **2014**, *12*, 465–489. [\[CrossRef\]](#)
66. Hernández-Mogollón, R.; Cepeda-Carrión, G.; Cegarra-Navarro, J.G.; Leal-Millán, A. The role of cultural barriers in the relationship between open-mindedness and organizational innovation. *J. Organ. Chang. Manag.* **2010**, *23*, 360–376. [\[CrossRef\]](#)
67. Bharadwaj, S.; Menon, A. Making innovation happen in organizations: Individual creativity mechanisms, organizational creativity mechanisms or both?: An International Publication of the Product Development & Management Association. *J. Prod. Innov. Manag.* **2000**, *17*, 424–434.
68. Beer, M.; Eisenstat, R.A.; Spector, B. Why change programs do not produce change. *Harv. Bus. Rev.* **1990**, *68*, 158–166. [\[PubMed\]](#)
69. Hussain, K.; Konar, R.; Ali, F. Measuring Service Innovation Performance through Team Culture and Knowledge Sharing Behaviour in Hotel Services: A PLS Approach. *Procedia Soc. Behav. Sci.* **2016**, *224*, 35–43. [\[CrossRef\]](#)
70. Ruppel, C.P.; Harrington, S.J. The Relationship of Communication, Ethical Work Climate, and Trust to Commitment and Innovation. *J. Bus. Ethic.* **2000**, *25*, 313–328. [\[CrossRef\]](#)
71. Fang, C.H.; Chang, S.T.; Chen, G.L. Organizational learning capability and organizational innovation: The moderating role of knowledge inertia. *Afr. J. Bus. Manag.* **2011**, *5*, 1864–1870.
72. Chang, H.S.; Oh, J.E.; Choi, Y.J.; Han, J.H. Mediating Effect of Change Management Activity on the Relationship between the Role of Participants of ERP Implementation and System Performance. *J. Inf. Syst.* **2011**, *16*, 75–106.
73. Lee, J.S. *The Public Administration Dictionary*; DAE YOUNG CO: Seoul, Korea, 2009.
74. Bums, J.M. *Leadership*; Harper & Row: New York, NY, USA, 1978.
75. Bass, B.M. Leadership: Good, better, best. *Organ. Dyn.* **1985**, *13*, 26–40. [\[CrossRef\]](#)
76. Kuhnert, K.W.; Lewis, P. Transactional and transformational leadership: A constructive/developmental analysis. *Acad. Manag. Rev.* **1987**, *12*, 648–657. [\[CrossRef\]](#)
77. Conger, J.A. Charismatic and transformational leadership in organizations: An insider’s perspective on these developing streams of research. *Leadersh. Q.* **1999**, *10*, 145–179. [\[CrossRef\]](#)
78. Kim, H.I. The Influence of Internal-Marketing Factors on Job Satisfaction and Customer Orientation at Call-Center. Master’s Thesis, Jeonbuk National University, Jeonju, Korea, 2009.
79. Noe, R.A. Trainees’ attributes and attitudes: Neglected influences on training effectiveness. *Acad. Manag. Rev.* **1986**, *11*, 736–749. [\[CrossRef\]](#)
80. Cascio, W.F.; Award, E.M. *Human Resources Management: An Information Processing Approach*; Reston Publish Company: Reston, VA, USA, 1981.
81. Beach, D. *Personnel: The Management of People at Work*; Macmillan: New York, NY, USA, 1980.
82. Anthony, W.P.; Perrewe, P.; Kacmar, K.M. *Human Resource Management: A Strategic Approach*, 3rd ed.; Dryden: Fort Worth, TX, USA, 1999.
83. Park, D.S. *Personnel Administration Theory*; Beommunsa: Seoul, Korea, 2001; pp. 212–213.
84. Kim, J.S. A Study of The Effect of Reality Therapy among Nonhandicapped Sibling Group in Behavior toward Siblings with Disabilities and Internal: External Locus of conrol. Master’s Thesis, Ewha woman’s University, Seoul, Korea, 2001.
85. Locke, E.A. Toward a theory of task motivation and incentives. *Organ. Behav. Hum. Perform.* **1968**, *3*, 157–189. [\[CrossRef\]](#)

86. Locke, E.A.; Latham, G.P. *A Theory of Goal Setting and Task Performance*; Prentice-Hall: Englewood Cliffs, NJ, USA, 1990.
87. Locke, E.A.; Latham, G.P. New directions in goal-setting theory. *Curr. Dir. Psychol. Sci.* **2006**, *15*, 265–268. [CrossRef]
88. Stetler, K.L.; Magnusson, M. Exploring the Tension between Clarity and Ambiguity in Goal Setting for Innovation: Clarity and Ambiguity in Goal Setting for Innovation. *Creat. Innov. Manag.* **2015**, *24*, 231–246. [CrossRef]
89. Andrews, R.; Boyne, G.A.; Meier, K.J.; O'Toole, L.J., Jr.; Walker, R.M. Representative bureaucracy, organizational strategy, and public service performance: An empirical analysis of English local government. *J. Public Adm. Res. Theory* **2005**, *15*, 489–504. [CrossRef]
90. Klein, K.J.; Sorra, J.S. The challenge of innovation implementation. *Acad. Manag. Rev.* **1996**, *21*, 1055–1080. [CrossRef]
91. Lawless, M.W.; Anderson, P.C. Generational technological change: Effects of innovation and local rivalry on performance. *Acad. Manag. J.* **1996**, *39*, 1185–1217.
92. McGrath, R.G.; Tsai, M.-H.; Venkataraman, S.; Macmillan, I.C. Innovation, Competitive Advantage and Rent: A Model and Test. *Manag. Sci.* **1996**, *42*, 389–403. [CrossRef]
93. Robinson, W.T. Product Innovation and Start-Up Business Market Share Performance. *Manag. Sci.* **1990**, *36*, 1279–1289. [CrossRef]
94. Shane, S.; Venkataraman, S.; MacMillan, I. Cultural differences in innovation championing strategies. *J. Manag.* **1995**, *21*, 931–952. [CrossRef]
95. Tabak, F.; Barr, S.H. Adoption of organizational innovations: Individual and organizational determinants. *Acad. Manag. Proc.* **1996**, *1996*, 388–392. [CrossRef]
96. Kim, G.J.; Kang, J.S. The Effect of Work Autonomy and Goal Clarity on Innovative Behavior of Public Officials: Focusing on the Difference between Managers and Non-Managers. *Koeran Public Pers. Adm. Rev.* **2019**, *18*, 1–33.
97. Burnside, R.M. Improving Corporate Climates for Creativity. In *Innovation and Creativity at Work*; Farr, J.L., Ed.; John Wiley & Sons Ltd.: Shandaken, NY, USA, 1990.
98. Scott, S.G.; Bruce, R.A. Determinants of innovative behavior: A path model of individual innovation in the work-place. *Acad. Manag. J.* **1994**, *37*, 580–607.
99. Lieu, E.Y.; Yu, M.B. The Effect of Emotional Intelligence by a Leader on the Relationship between Behavioral Types and Innovative Activities: Applying LISREL and Mediator Regression Analysis. *Korean Public Adm. Rev.* **2008**, *42*, 157.
100. Amabile, T.M.; Conti, R.; Coon, H.; Lazenby, J.; Herron, M. Assessing the work environment for creativity. *Acad. Manag. J.* **1996**, *39*, 1154–1184.
101. Shin, S.J.; Zhou, J. When is educational specialization heterogeneity related to creativity in research and development teams? Transformational leadership as a moderator. *J. Appl. Psychol.* **2007**, *92*, 1709–1721. [CrossRef]
102. Howell, J.M.; Higgins, C.A. Champions of Technological Innovation. *Adm. Sci. Q.* **1990**, *35*, 317. [CrossRef]
103. Avolio, B.J.; Bass, B.M. *Transformational Leadership, Charisma, and Beyond*; Lexington Books: Lanham, MD, USA, 1988.
104. Conger, J.A.; Kanungo, R.N. Toward a behavioral theory of charismatic leadership in organizational settings. *Acad. Manag. Rev.* **1987**, *12*, 637–647. [CrossRef]
105. Kirkpatrick, S.A.; Locke, E.A. Direct and indirect effects of three core charismatic leadership components on performance and attitudes. *J. Appl. Psychol.* **1996**, *81*, 36. [CrossRef]
106. Lin, H. Knowledge sharing and firm innovation capability: An empirical study. *Int. J. Manpow.* **2007**, *28*, 315–332. [CrossRef]
107. Ahmad, A.B.; Straatmann, T.; Mueller, K.; Liu, B. Employees' change support in the public sector—A multi-time field study examining the formation of intentions and behaviors. *Public Adm. Rev.* **2020**. [CrossRef]
108. Baek, S.; Kim, S. Participatory Public Service Design by Gov.3.0 Design Group. *Sustainability* **2018**, *10*, 245. [CrossRef]
109. Kim, Y.M.; Cho, S.H.; Leem, W.B. Study on the Effects of the Organizational Diagnosis Consulting Model 7S Factors on Innovative Behavior. *Korean Bus. Educ. Rev.* **2013**, *28*, 257–277.
110. Rogers, E.M. *Diffusion of Innovations*, 4th ed.; Free Press: New York, NY, USA, 1995.
111. Lee, S.C. The Effect of Organizational Culture and CEO's Leadership on Organizational Innovation in Medical Institutions. Ph.D. Thesis, Kosin University, Busan, Korea, 2018.
112. Kim, J.S. The Impacts of Strategic Human Resource Management for Employees of Taekwondo Organizations on Organizational Credibility and Innovative Behaviors. Ph.D. Thesis, Chonbuk National University, JeonJu, Korea, 2017.
113. Kim, H.B. The Multiple Mediating Effects of Learning Organization Level and Self-Directed Learning Ability on the Relationship between Leader-Member Exchange(LMX) and Innovation Behavior in Local Education Administrative Officers. Ph.D. Thesis, Inha University, Incheon, Korea, 2019.
114. Park, S.J. A Study on Effects of Governmental Organizational Learning on Organizational Effectiveness: Focusing on Mediating Effects of Innovative Behaviors. Ph.D. Thesis, Hansung University, Seoul, Korea, 2018.
115. Shim, J.Y. The Structural Relationships between Secondary School Principals' Empowering Leadership, School Organizational Climate for Innovation, Teachers' Organizational Commitment, Informal Learning, and Innovative Behavior. Ph.D. Thesis, Soongsil University, Seoul, Korea, 2016.
116. Oh, S.T. The Relationships among Performance-Oriented Human Resource Management, Job Satisfaction and Innovative Behavior, and the Moderating Effect of Social Capital in Small Business. Ph.D. Thesis, Sangji University, Wonju, Korea, 2019.
117. Lee, S.J.; Ahn, S.Y. The Impacts of Human capital, Institutional and Environmental Factors on Innovative Behavior of Government Officials: Focusing the Difference on the Rank of Government Officials. *Korean Public Pers. Adm. Rev.* **2002**, *18*, 187–208. Available online: <http://www.papersearch.net/thesis/article.asp?key=3708114> (accessed on 15 February 2021).

118. Brooks-Rooney, A.; West, M.A. Innovation at work. In Proceedings of the A Symposium Convened at the Annual Conference of the Occupational Psychology Section and Division of the BPS, Hull, UK, 7–9 April 1987; pp. 5–7.
119. Meyer, A.D. Adapting to Environmental Jolts. *Adm. Sci. Q.* **1982**, *27*, 515. [\[CrossRef\]](#)
120. Bisesi, M.; Kanter, R.M. The Change Masters: Innovations for Productivity in the American Corporation. *Acad. Manag. Rev.* **1984**, *9*, 769. [\[CrossRef\]](#)
121. Ko, H.-S.; Kim, J.-H. Relationship between Transformational Leadership and Innovative Behavior. *J. Korea Contents Assoc.* **2011**, *11*, 361–377. [\[CrossRef\]](#)
122. Kim, H.R. A Study on the Influence of Middle Managers' Leadership in General Hospital to the Organizational Effectiveness and Organizational Innovation—Focused on the Moderating Effect of Employee's Readiness. Ph.D. Thesis, Eulji University, Daejeon, Korea, 2016.
123. Shin, D.G. The Influence of Transformational Leadership on Civil Society Organization. Ph.D. Thesis, Konkuk University, Seoul, Korea, 2014.
124. Shin, J.S. Organizational Innovativeness in Social Welfare Organizations: Focusing on its Relationships to Organizational Characteristics/Leadership and Organizational Performance. *J. Korean Soc. Welf. Adm.* **2012**, *14*, 1–26.
125. Yoon, T.S. The Relationships among CEO Transformational Leadership, Organizational Innovativeness, and Organizational Performance: The Mediating Effect on the Change Commitment of TMT. Ph.D. Thesis, SungKyunKwan University, Seoul, Korea, 2011.
126. Lee, D.H. The Influence of Transformational Leadership on Innovative Behavior via Empowerment and Leader Dependency. *J. Ind. Econ. Bus.* **2012**, *25*, 1883–1903.
127. Jang, W.Y. Study on Leadership in the Relationship between Organizational Culture & Innovation of KORAIL. Ph.D. Thesis, Hannam University, Daejeon, Korea, 2016.
128. Gi-Ho, H. Study on Organizational Innovation of Elderly Care Facilities. Ph.D. Thesis, Seonam University, Namwon, Korea, 2018.
129. Chun, K.J. An Empirical Study of the Public Officials Participation and the Government Organizational Innovation. *J. Korea Acad. Ind. Coop. Soc.* **2006**, *7*, 1381–1389.
130. Evan, W.M.; Black, G. Innovation in Business Organizations: Some Factors Associated with Success or Failure of Staff Proposals. *J. Bus.* **1967**, *40*, 519. [\[CrossRef\]](#)
131. Fiol, C.M.; Ford, C.M.; Gioia, D.A. Creative Action in Organizations: Ivory Tower Visions and Real World Voices. *Adm. Sci. Q.* **1997**, *42*, 826. [\[CrossRef\]](#)
132. Paolillo, J.G.; Brown, W.B. How Organizational Factors Affect R&D Innovation. *Res. Manag.* **1978**, *21*, 12–15. [\[CrossRef\]](#)
133. Battistella, C.; De Toni, A.F.; Pessot, E. Framing Open Innovation in Start-Ups' Incubators: A Complexity Theory Perspective. *J. Open Innov. Technol. Mark. Complex.* **2018**, *4*, 33. [\[CrossRef\]](#)
134. Ling, T.C.; Nasurdin, A.M. Human Resource Management Practices and Organizational Innovation: An Empirical Study In Malaysia. *J. Appl. Bus. Res.* **2010**, *26*. [\[CrossRef\]](#)
135. Kwon, J.H.; Choi, Y.J. The Effect of Customer Relationship Management and Learning Capability on Organizational Innovation in Bank. *Knowl. Manag. Res.* **2016**, *17*, 227–248.
136. Ok, C.H. The Effect of a Dedicated Human Resource Management System on Organizational Innovation: Focusing on the Concept of Self-Organization. Ph.D. Thesis, Korea University, Seoul, Korea, 2017.
137. Choi, S.B. An Empirical Study on the Relationships among Organizational Culture, Learning Orientation and Innovation of Employees: The Moderating Role of Perceived Organizational Support. *J. Ind. Econ. Bus.* **2011**, *24*, 3631–3653.
138. Lee, M.S.; Kang, Y.S. The relationship between creativity and innovation behavior and the moderating effect of group characteristics. *Organ. Pers. Manag. Res.* **2003**, *27*, 251–272.
139. Glynn, M.A. Innovative genius: A framework for relating individual and organizational intelligences to innovation. *Acad. Manag. Rev.* **1996**, *21*, 1081–1111. [\[CrossRef\]](#)
140. Peters, Melanie. Perceptions of innovation focused HRM and its impact on employee outcomes and organizational innovation in technology firms. Master's Thesis, University of Twente, Enschede, The Netherlands, 2014.
141. Crant, J.M. Proactive behavior in organizations. *J. Manag.* **2000**, *26*, 435–462. [\[CrossRef\]](#)
142. Van der Voet, J.; Kuipers, B.S.; Groeneveld, S. *A Change Management Perspective*; Routledge: Abingdon-on-Thames, UK, 2016; pp. 79–99.
143. Schneider, B.; Gunnarson, S.K.; Niles-Jolly, K. Creating the climate and culture of success. *Organ. Dyn.* **1994**, *23*, 17–29. [\[CrossRef\]](#)
144. Parker, S.K.; Williams, H.M.; Turner, N. Modeling the antecedents of proactive behavior at work. *J. Appl. Psychol.* **2006**, *91*, 636–652. [\[CrossRef\]](#) [\[PubMed\]](#)
145. Jong, J.; Hartog, D. Measuring innovative work behaviour. *Creat. Innov. Manag.* **2010**, *19*, 23–36. [\[CrossRef\]](#)
146. Kleysen, R.F.; Street, C.T. Toward a multi-dimensional measure of individual innovative behavior. *J. Intellect. Cap.* **2001**, *2*, 284–296. [\[CrossRef\]](#)
147. Kheng, Y.; Mahmood, R.; Beris, S. A Conceptual Review of Innovative Work Behavior in Knowledge Intensive Business Services among Knowledge Workers in Malaysia. *Int. J. Bus. Humanit. Technol.* **2013**, *3*, 91–99.
148. Choi, M.K.; Lee, J.W. The Design of An Integrated Model and the Generation of Propositions on Organizational Innovation. *Korean Manag. Rev.* **1998**, *27*, 1331–1360.

149. Chiaroni, D.; Chiesa, V.; Frattini, F. The Open Innovation Journey: How firms dynamically implement the emerging innovation management paradigm. *Technovation* **2011**, *31*, 34–43. [[CrossRef](#)]
150. Kahai, S.S.; Sosik, J.J.; Avolio, B.J. Effects of leadership style, anonymity, and rewards on creativity-relevant processes and outcomes in an electronic meeting system context. *Lead. Q.* **2003**, *14*, 499–524. [[CrossRef](#)]
151. Wiedemann, A.U.; Schütz, B.; Sniehotta, F.; Scholz, U.; Schwarzer, R. Disentangling the relation between intentions, planning, and behaviour: A moderated mediation analysis. *Psychol. Health* **2009**, *24*, 67–79. [[CrossRef](#)]
152. Pirola-Merlo, A.; Mann, L. The relationship between individual creativity and team creativity: Aggregating across people and time. *J. Organ. Behav.* **2004**, *25*, 235–257. [[CrossRef](#)]
153. Litchfield, R.C.; Ford, C.M.; Gentry, R.J. Linking Individual Creativity to Organizational Innovation. *J. Creat. Behav.* **2014**, *49*, 279–294. [[CrossRef](#)]
154. Hayes, A.F. *Introduction to Mediation, Moderation, and Conditional Process Analysis. A Regression-Based Approach*; The Guilford Press: New York, NY, USA, 2013.
155. Baron, R.M.; Kenny, D.A. The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *J. Personal. Soc. Psychol.* **1986**, *51*, 1173. [[CrossRef](#)]
156. Sobel, M.E. Asymptotic confidence intervals for indirect effects in structural equation models. *Sociol. Methodol.* **1982**, *13*, 290–312. [[CrossRef](#)]
157. Bollen, K.A.; Stine, R. Direct and Indirect Effects: Classical and Bootstrap Estimates of Variability. *Sociol. Methodol.* **1990**, *20*, 115. [[CrossRef](#)]
158. Shrout, P.E.; Bolger, N. Mediation in experimental and nonexperimental studies: New procedures and recommendations. *Psychol. Methods* **2002**, *7*, 422. [[CrossRef](#)] [[PubMed](#)]
159. Stephan, E.; Wildschut, T.; Sedikides, C.; Zhou, X.; He, W.; Routledge, C.; Cheung, W.-Y.; Vingerhoets, A.J.J.M. The mnemonic mover: Nostalgia regulates avoidance and approach motivation. *Emotion* **2014**, *14*, 545–561. [[CrossRef](#)]
160. Toyama, H.; Mauno, S. Associations of Trait Emotional Intelligence with Social Support, Work Engagement, and Creativity in Japanese Eldercare Nurses. *Jpn. Psychol. Res.* **2016**, *59*, 14–25. [[CrossRef](#)]
161. Martela, F.; Ryan, R.M. Prosocial behavior increases well-being and vitality even without contact with the beneficiary: Causal and behavioral evidence. *Motiv. Emot.* **2016**, *40*, 351–357. [[CrossRef](#)]
162. Garofalo, C.; Holden, C.J.; Zeigler-Hill, V.; Velotti, P. Understanding the connection between self-esteem and aggression: The mediating role of emotion dysregulation. *Aggress. Behav.* **2016**, *42*, 3–15. [[CrossRef](#)]
163. Felipe, C.M.; Roldán, J.L.; Leal-Rodríguez, A.L. An explanatory and predictive model for organizational agility. *J. Bus. Res.* **2016**, *69*, 4624–4631. [[CrossRef](#)]
164. Jaffee, S.R.; McFarquhar, T.; Stevens, S.; Ouellet-Morin, I.; Melhuish, E.; Belsky, J. Interactive effects of early and recent exposure to stressful contexts on cortisol reactivity in middle childhood. *J. Child Psychol. Psychiatry* **2015**, *56*, 138–146. [[CrossRef](#)] [[PubMed](#)]
165. Schönfeld, P.; Brailovskaia, J.; Bieda, A.; Zhang, X.C.; Margraf, J. The effects of daily stress on positive and negative mental health: Mediation through self-efficacy. *Int. J. Clin. Health Psychol.* **2016**, *16*, 1–10. [[CrossRef](#)] [[PubMed](#)]
166. De Veirman, M.; Cauberghe, V.; Hudders, L. Marketing through Instagram influencers: The impact of number of followers and product divergence on brand attitude. *Int. J. Advert.* **2017**, *36*, 798–828. [[CrossRef](#)]