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The Dynamics between Public Sector Entrepreneurship and Performance: The Mediating Effect of Communication

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This empirical study analyzes the dynamics among public sector entrepreneurship, organizational performance, and communication. This study presents a conceptual model to explain how entrepreneurial orientation in the public sector enhances public organizations' performance through the mediating effect of communication. This study utilizes the 2022 Public Employee Perception Survey produced by the Korea Institute of Public Administration, which presents a variety of public servants' perceptions and administrative features of public organizations in South Korea. To test the proposed hypotheses, this study employs structural equation modeling. The results show that entrepreneurial orientation has a positive effect on public organizations' performance, and communication within the organizations mediates the relationship between these two variables. This study offers a nuanced perspective on implementing an entrepreneurial orientation in the public sector by explaining how public-sector entrepreneurship can promote organizational performance through well-structured communication. This insight is valuable for public administration scholars and practitioners.

Keywords: *public sector entrepreneurship, communication, organizational performance, structural equation modeling, mediating effect*

Introduction

Public organizations have faced a variety of wicked problems (Head, 2019; Peters, 2017; Rittle & Webber, 1973) that are not easily solvable largely due to the presence of various stakeholders (Head & Alford, 2015) and conflicting values inherent in the public sector (Peters & Tarpey, 2019; Van Der Wal et al., 2011). In addition, multiple stakeholders contribute to increased complexity in the decision-making process, which may lead to disagreements and conflicts among stakeholders as well as uncertainty in decision-making (Head & Alford, 2015). Due to rapidly changing environmental factors, governments adhering to traditional bureaucratic principles were not able to effectively address administrative challenges, leading to various government failures (Awamleh et al., 2021; Bryson et al., 2014; Jones & Hameiri, 2022). For example, during the COVID-19 Pandemic, many governments failed to manage or control the spread of the disease because of the deficiency of administrative capacities, including responsiveness, leadership, speed, innovativeness, and adaptability, to deal with such an extreme event (Moon, 2020;

Schismenos et al., 2020)

Even though most governments have recovered from the significant aftermath of COVID-19, most public administration researchers question the role and capacity of the traditional bureaucratic government systems in a turbulent environment, and they suggest reinventing governing models to be better prepared to face future crises. Consequently, scholars and practitioners turned to new governing models to respond to various extreme situations characterized by high volatility, uncertainty, complexity, and ambiguity (VUCA) (Bennett & Lemoine, 2014; Horney et al., 2010) as well as to improve organizational capacities, such as agility, adaptability, and responsiveness (Janssen & Van Der Voort, 2020; Moon, 2020).

In addition, public administration scholars have highlighted entrepreneurship as a valuable approach to improve organizational capacities and adapt to changing environments. Entrepreneurship involves the strategic adoption of new and innovative technologies and resources with manageable risks to achieve specific goals, such as efficiency, productivity, performance, and collaboration (Bernier & Hafsi, 2007; Diefenbach, 2011; Kim, 2010a; Klein et al., 2010). The entrepreneurship model introduces a new approach to making organizations innovative and competitive under uncertain conditions. It proposes that public sector entrepreneurship is an integrative framework that focuses on strategic activities and principles in response to environmental changes (Kearney et al., 2009; Moon, 1999). While public sector entrepreneurship can be defined as a “multi-level phenomenon characterized by a context dependent combination of proactivity, innovation, and risk-taking, that serves to drive change and renewal, promote resilient organizations, and resourcefully exploit opportunities for public value creation, with the ultimate aim of achieving positive societal and environmental outcomes” (Vivona et al., 2024, p. abstract), the term entrepreneurial orientation captures how organizations develop a strategic attitude to encourage entrepreneurial behavior (Lumpkin & Dess, 1996).

As a result, extant research has identified three dimensions of entrepreneurial orientation, including innovativeness, proactiveness, and risk-taking (Bernier & Hafsi, 2007; Kim, 2010b; Moon et al., 2020; Morris & Jones, 1999). Accordingly, some empirical studies have focused on establishing a theoretical linkage between the dimensions of entrepreneurial orientation and other important topics in public administration, including but not limited to leadership, job satisfaction, organizational culture, and economic growth (Demircioglu & Chowdhury, 2021; Hafer, 2013; Karyotakis & Moustakis, 2016; Moon et al., 2020). However, some researchers argue that many discussions on public sector entrepreneurship only highlight conceptual implications of the framework or replicate measurable variables from the private sector in empirical studies on this topic (Diefenbach, 2011). In other words, even though these studies have contributed to the theoretical discussion of public sector entrepreneurship, they do not sufficiently explain how the principle can be indicated as a measurable variable and how it influences other factors in practice. The purpose of this study is to explore how entrepreneurial orientation impacts performance in public organizations. While previous studies have established a relationship between entrepreneurial orientation and performance in both the public and private sectors (Caruana et al., 2002; Ireland et al., 2003; Kim, 2010a, 2010b; Rauch et al., 2009), most of those studies mainly focus on a linear and direct relationship between these two variables. Therefore, to discover other significant influences on the relationship between entrepreneurship and performance from other latent variables, this study examines the role of communication as a mediator in the causal relationship. Scholars have suggested that communication has significant influences on entrepreneurship and performance in public organizations (Chang, 2015; Garnett et al., 2008).

As one of the notable variables in organization studies, communication has been one of the key factors that can have a significant impact on various organizational outcomes, such as productivity, organizational effectiveness, and performance (Ananda et al., 2018; Elving, 2005; Garnett et al., 2008; Mercader et al., 2021; Mohd Adnan & Valliappan, 2019). Furthermore, existing studies demonstrate that communication can play a significant role in performing information activities, such as creating, accumulating, and diffusing information as a channel to secure resources as well as achieving successful organizational changes (Elving, 2005) and desired outcomes, such as operational success, high performance, customer satisfaction, and profitability that are in accordance with the purpose of entrepreneurship (Chang, 2015, p. 8). In other words, as a tool for transmitting and sharing informational resources, communication can not only be considered an outcome stemming from the implementation of entrepreneurship but also a predictor of performance. This study aims to empirically test a theoretical framework that illustrates the causal dynamics between entrepreneurial orientation and performance based on extant literature. Additionally, the study seeks to investigate the impact of communication as a mediator in the conceptual model. To examine the conceptual model empirically, this study postulates several hypotheses and conducts a quantitative analysis. This study will contribute to revisiting the theoretical dynamics between entrepreneurial orientation and performance through the mediating role of communication. The study's empirical findings described in this article are important for their contribution to the literature on performance management in the public sector and for practitioners serving the public.

The article unfolds as follows. First, through a review of the extant literature, it discusses the main variables in this research, including public sector entrepreneurship, communication, and organizational performance. Subsequently, it proposes a conceptual framework indicating how entrepreneurial orientation affects organizational performance through the mediating role of organizational communication and develops the hypotheses to be tested. Following that theoretical discussion, this study employs structural equation modeling to analyze the proposed hypotheses and presents the results. Lastly, it discusses the findings and limitations of the study and provides implications and recommendations to practitioners.

Theoretical Background

The Concept of Entrepreneurship

The concept of 'entrepreneur' was introduced by Cantillon in the 1800s to emphasize the necessity of innovative and creative behaviors among private actors seeking lucrative business opportunities and resources in uncertain circumstances. This concept particularly highlights the importance of creativity to achieve organizational development and goals by applying this new perspective (Bernier, 2014; Cuervo García et al., 2007). Following the development of this concept, many scholars and practitioners have sought to understand the principle of entrepreneurship. For instance, Schumpeter (1942) refers to the entrepreneurial perspective as "creative destruction" highlighting how innovation drives economic growth and organization development. In the business world, entrepreneurship involves strategic practices such as risk-taking, proactively seeking opportunities, and product innovation to achieve sustained effectiveness (Covin & Slevin, 1991). Lumpkin & Dess (1996) explain that entrepreneurship refers to an integrated multidimensional managerial framework that includes understanding the strategic dynamics of new market entries, including practices, decision-making processes, and activities, which are associated with future-oriented values. Likewise, many entrepreneurship scholars in various fields have discussed entrepreneurship's implications and concluded that it is

effective for organizations in creating wealth, value, and development (Covin & Slevin, 1991; Kearney et al., 2009; Kim, 2010b; Klein et al., 2010; Low, 2001). Hence, the existing literature suggests that entrepreneurship refers to a multidimensional concept and includes various individual or organizational attributes as measures to investigate various behavioral patterns and phenomena in contexts such as business, management, marketing, economics, or ethics (Wales et al., 2013).

Dimensions of Entrepreneurship

Even though various scholars have defined the main attributes of entrepreneurship in different ways, the literature identifies three main dimensions of entrepreneurship orientation (Caruana et al., 2002; Covin & Slevin, 1991; Diefenbach, 2011; Kim, 2010a, 2010b; Lumpkin & Dess, 1996; Miller, 1983; Morris & Jones, 1999; Smith, 2012; Vivona et al., 2024). First, innovativeness refers to an aptitude to develop and engage in novel and creative practices, such as ideas, services, processes, and solutions, in order to achieve lucrative results (Kim, 2010a; Lumpkin & Dess, 1996; Moon et al., 2020). Caruana et al. (2002) explain that innovativeness refers to one of the core values of the entrepreneurial initiative, which focuses on the pursuit of new approaches or alternatives instead of depending on extant processes or solutions. In other words, innovativeness is associated with openness to new practices and techniques for problem-solving as well as organizational development (Alvarez & Busenitz, 2001; Kim, 2010a). Second, proactiveness is an active and agile attitude that recognizes changes happening in the environment, seizes opportunities, and creates new products and services to stay competitive. Organizations with a proactive approach pursue new ways of operating in changing markets ahead of competitors to secure valuable resources (Caruana et al., 2002) and maintain a competitive advantage (Ireland et al., 2003). For instance, according to Davis et al. (1991), proactiveness can improve the organization's capacity to respond to various potential challenges by allowing them to anticipate and react to future demands and environmental changes. As a result, this approach allows organizations to achieve a high level of performance since proactiveness can improve their operational efficiencies through behavioral changes, such as introducing innovation, reallocating resources, and creating an innovative environment (Kim, 2010b, p. 786). Third, risk-taking is the propensity to adopt new business opportunities with manageable risks. This factor refers to the willingness to take chances with a reasonable possibility of economic failures to achieve high performance by appropriately calculating risks and rewards (Caruana et al., 2002). These three conceptual dimensions of entrepreneurial orientation can be understood as one integrated attribute that pertains to the advantage-seeking perspective, highlighting the pursuit of opportunities that can lead to organization development and increased productivity (Kearney et al., 2009, p. 38). Even though each dimension implies a slightly different perspective of entrepreneurial orientation, all three represent the diverse facets of this concept rather than isolated features of an organizational phenomenon. Therefore, in this study, those three dimensions are encompassed by the term entrepreneurship and measured as one variable to reflect the entrepreneurial orientation of organizations (Chang, 2015; Davis et al., 1991).

Why Organizations Should Embrace an Entrepreneurial Mindset: A Resource-Based Perspective

Entrepreneurship is closely associated with the resource-based view, specifically in terms of acquiring resources and identifying business opportunities in uncertain environments (Alvarez & Busenitz, 2001; Chang, 2015; Ireland et al., 2003). For example, Ireland et al. (2003, p. 979) argue that strategic resource management, which involves acquiring, accumulating, and divesting resources, is a critical part of establishing organizations. Therefore, all organizations prioritize securing available resources to maintain competitive advantages through strategic resource

management. Even though all organizations focus on securing and managing key resources, they differ in how they acquire them due to their characteristics in the organizational environment, such as non-substitutable, unique, and irreproducible (Vibert, 2004, p. 50). To be specific, resources are heterogeneous and immobile assets (Barney, 2001; Ireland et al., 2003), which demonstrates that competing organizations can retain and manage different resources (resource heterogeneity), and the imbalance in resources secured by each organization may persist (resource immobility). Therefore, the degree of acquisition and accumulation of resources among organizations inevitably varies. Similarly, implementing an entrepreneurial orientation may encourage members to explore and elaborate on new ideas and practices, which contribute to knowledge sharing or exchange across the units or departments (Bratianu et al., 2023). This organizational propensity indicates that entrepreneurial orientation emphasizes embedded information systems or institutions, such as knowledge sharing and communication, to generate, assimilate, diffuse, and refine core knowledge resources for expected outcomes (Butkouskaya et al., 2020; Hormiga et al., 2017).

Consequently, when organizations succeed in acquiring the resources that they need, they can gain sustainable competitive advantages over their competitors and improve organizational efficiency and performance (Ireland et al., 2003). Based on the resource-based model, entrepreneurial orientation, which involves advantage-seeking behaviors, allows organizations to explore and exploit available resources and opportunities that are untapped or not yet preempted. In addition, the increase in available resources through the implementation of an entrepreneurial orientation can perform as a major input in improving the organization's productivity and performance, providing additional opportunities that help the organization maintain sustainable competitive advantages over other organizations (Vibert, 2004).

The Introduction of Entrepreneurship in the Public Sector: Public Sector Entrepreneurship

Various administrative issues and shortcomings in the public sector prompted public administration scholars to develop new initiatives for reforming traditional bureaucratic paradigms, which emphasize hierarchical decision-making and established rules. To tackle these challenges, New Public Management (NPM) came about. This movement aimed to create small and effective governments by applying managerial techniques inspired by public sector entrepreneurship (Frederickson et al., 2018). Scholars argued that public organizations should be more innovative and proactive to survive in a rapidly changing environment (Arundel et al., 2015; Demircioglu & Chowdhury, 2021). As the NPM initiative gained attention, public management scholars asserted the necessity of reinventing government to redefine its role as well as make it more innovative and creative: public servants gained the freedom to manage, while granting politicians greater authority to establish strategic directions and allocate resources (Grimm & Bock, 2022). Consequently, various managerial strategies rooted in public sector entrepreneurship have been developed and implemented to enhance the efficiency and effectiveness of governments (Bernier & Hafsi, 2007; Kim, 2010a). Indeed, public sector entrepreneurship has been developed and considered a new managerial principle allowing governmental organizations to achieve sustainable social prosperity and organizational development through creative changes (Klein et al., 2010).

Recent perspectives on public sector entrepreneurship emphasize that the initiatives taken by entrepreneurial governments and public sector organizations have been the primary drivers of innovation and industrial renewal, and that independent entrepreneurs and large companies have largely followed and leveraged these efforts over the years (Mazzucato 2013; 2021; Kattel et. al

2023). This perspective is also in line with recent studies on public sector innovativeness (Cinar et al., 2024; Demircioglu et al., 2024; Gullmark, 2021; Suchitwarasan et al., 2024).

In the field of public administration, entrepreneurial orientation has been associated with various terms and concepts, such as public service motivation, governance, public value, public leadership, and performance (Bernier, 2014; Caruana et al., 2002; Diefenbach, 2011; Kearney et al., 2009; Klein et al., 2010; Moon, 1999; Rauch et al., 2009; Vogel & Masal, 2015). Recent research on public sector entrepreneurship attempts to show, through empirical analyses and case studies, how an entrepreneurial orientation in public sector organizations impacts organizational outcomes, including productivity and performance (Caruana et al., 2002; Kim, 2010a, 2010b; Moon et al., 2020; Seo & Chung, 2012). In essence, entrepreneurial orientation can be seen as an integrated cognitive framework to understand organizational behaviors and the ability to acquire resources and seize opportunities in the public sector.

Theoretical Linkages with Public Sector Entrepreneurship

Government Performance: When assessing organizational outcomes in the public sector, government performance is often seen as a key indicator of productivity. Performance can be measured not only by financial indicators or outputs, such as the efficiency and effectiveness of programs, but also by perceptual and value-oriented indicators, including responsiveness, communication, equity, and cooperation (Walker & Boyne, 2006). Notably, public organizations have multifaceted dimensions of performance encompassing several managerial aspects and public values (Brewer & Walker, 2010). In addition, there are multiple stakeholders with different interests in the decision-making process in the public sector. Because each stakeholder has a unique priority and propensity to assess performance, the participation of multiple stakeholders in the decision-making process can contribute to divergent dimensions of performance (Walker et al., 2013). Due to these inherent characteristics of public organizations, measuring performance in the public sector should consider more comprehensive and broad facets of performance than other types of organizations.

In discussing how to measure government performance, scholars have considered two approaches: perceptual and archival data (Kim, 2010a; Walker et al., 2013). Some studies conclude that compared to perceptual data, archival records can help enhance the validity of measuring performance (Johnson et al. 2015), but this approach may not encompass all dimensions of performance that represent the capacity of organizations. Perceptual data sources can capture a broader range of dimensions of performance (Moynihan & Pandey, 2004; Walker et al., 2013), which can be conducive to identifying the latent effects of indicators on performance (Brewer & Walker, 2010, p. 238). Moreover, due to the challenges of developing unbiased and comprehensive predictors of public organizations' performance, many extant studies have relied on perceptual measures to evaluate organizational performance (Kim, 2010a; Moon et al., 2020; Walker et al., 2013), such as an employee-defined measure (Moynihan & Pandey, 2004, p. 429) or the perception of performance at the manager level (Nicholson-Crotty et al., 2017, p. 607). For example, Moon and colleagues (2020) in a study on public entrepreneurship and organizational performance in China and South Korea, employed the following perceptual measures of organizational performance: "In the past two years, the productivity of my work unit has improved" and "The customer satisfaction toward my organisation is very high" (p. 348). These measures aim to capture two aspects of organizational performance: the efficiency/productivity of an organizational (inward focus) and the quality of and satisfaction for the service and goods provided to citizens (outward focus). Furthermore, researchers found that self-reported subjective measures of organizational performance are internally consistent and therefore can be

successfully employed to assess organizational performance in lieu of objective measures (Singh et al., 2016).

With respect to the linkage between entrepreneurship and performance, the extant literature highlights that entrepreneurial orientation can be positively associated with organizational performance and other outcome variables; this insight is supported not only by theoretical reasoning but also empirical evidence (Arabeche et al., 2022; Arnold, 2019; Caruana et al., 2002; Covin & Slevin, 1991; Ireland et al., 2003; Kearney et al., 2009; Kim, 2010a; Moon et al., 2020; Rauch et al., 2009). For example, Rauch et al. (2009) report that entrepreneurship can play an important role in building strategy-making processes that contribute to some organizational achievements, such as higher performance, productivity, and competitive advantages (Ireland et al., 2003; Rauch et al., 2009). Furthermore, Arabeche et al. (2022) demonstrate that an entrepreneurial orientation encompassing the three dimensions of innovation, proactivity, and risk-taking, which are closely associated with the attribute of entrepreneurship, can improve organizational performance. Concerning the impact of entrepreneurial orientation on performance in public organizations, some public management researchers attempted to examine the conceptual linkage between the two subjects. For instance, Kearney et al. (2009) posit that performance can be considered as the consequence of entrepreneurship because creativity and innovation, which refer to the core values of entrepreneurial initiatives, contribute to a higher level of performance and well-performing organizations in the public sector (Kearney et al., 2009; Vigoda, 2002).

As highlighted above, even though public sector entrepreneurship differs from private entrepreneurship in several ways, such as goals, expected outcomes, main actors, and structural characteristics, both types of entrepreneurial orientation are positively associated with organizational performance (Jin et al., 2018; Kearney et al., 2009; Kim, 2010a; Moon et al., 2020; Rauch et al., 2009). For example, Kearney et al. (2009) stress that the impact of entrepreneurship on organizational performance depends on how much the organization embraces entrepreneurial principles. When organizations are open to innovation by supporting and adopting new technologies or processes, entrepreneurship may positively impact performance. Likewise, various organizational aspects, including culture, structure, control, and decision-making can significantly influence the relationship between entrepreneurial orientation and organizational outcomes (Kearney et al., 2009).

When it comes to empirical studies of public sector entrepreneurship and related subjects, Kim (2010a) found that adopting public sector entrepreneurship can contribute to higher performance in public organizations. Kim (2010a) argues that as governments prioritize entrepreneurial attributes that are associated with action-oriented and opportunity-seeking perspectives, they can seize additional opportunities as well as achieve improved performance. Similarly, Vuong (2023) highlights that innovative work behaviors that include the willingness to adopt new technologies, generate new ideas, and secure resources to achieve goals are positively associated with performance. Furthermore, Moon et al. (2020) emphasize that entrepreneurial leadership and other organizational factors are associated with an increase in organizational performance through the mediating role of public sector entrepreneurship. These findings emphasize that adopting entrepreneurial practices is necessary to improve organizational performance. Based on the existing research, this study proposes the following hypothesis regarding the components of public sector entrepreneurship, including innovativeness, proactiveness, risk-taking, and organizational performance.

Hypothesis 1: Entrepreneurial orientation is positively associated with public organizations' performance.

Communication

As one of the significant determinants influencing organization development, entrepreneurship has been a subject of extensive discussion across various disciplines (Abaci, 2022). Consequently, the study of entrepreneurship has prompted numerous experts in management to explore the features of entrepreneurship. This subject not only involves the development of theoretical frameworks but also the implementation of practical implications based on empirical findings (Kuratko et al., 2015). These academic contributions have led to in-depth discussions on the manifestation and application of entrepreneurship in practice, along with the expansion of theoretical connection with other influential factors in organization study, such as leadership, culture, structure, competency, collaboration, performance, and communication, which we define as the complete set of behaviors resulting from interactions among the members of an organizations or between organizations (Butkouskaya et al., 2020; Caruana et al., 2002; Fortunisa et al., 2018; Halim & Razak, 2014; Mercader et al., 2021; Rauch et al., 2009; Suh et al., 2018).

With respect to the aspect of entrepreneurship as a determinant of communication, extant literature posits that an entrepreneurial orientation is closely associated with dynamic capabilities, which refers to the core ability to search and obtain new opportunities and to secure knowledge-based resources and supplemental assets for competitive advantages (Augier & Teece, 2009; Teece et al., 1997). Also, effective organizations with entrepreneurial orientation and leadership attempt to actively share information with organizational members as a strategy of resource management in leveraging accumulated knowledge resources through institutionalized channels, including communication, for expected advantages and benefits (Ireland et al., 2003).

Considering the acquisition and accumulation of information and knowledge as one of the aspects of resource management, entrepreneurship plays a crucial role in exploring and exploiting resources, including new business opportunities, knowledge, and information (Alvarez & Busenitz, 2001; Foss et al., 2015; Ireland et al., 2003). This aligns with communication within organizations. As mentioned above, an entrepreneurial orientation aims to help organizations identify untapped resources in internal and external environments (exploration of resources) and utilize them (exploitation of resources). Kirzner (1997), for instance, states that entrepreneurial discovery is “the driving force” behind the “systematic process” by which market participants gain “more and more accurate and complete mutual knowledge of potential demand and supply attitudes” (p. 62). Therefore, actors exhibiting an entrepreneurial orientation not only are willing to be more innovative in acquiring the necessary informational resources aimed at enhancing their capabilities (Butkouskaya et al., 2020; Kraus et al., 2019), but they also effectively communicate it and involve subordinates in the implementation process, ensuring that subordinates are fully accountable for the success of these initiatives while fostering a sense of inspiration, motivation, and commitment towards them (Vivona, 2024; Westley and Mintzberg 1989).

As a part of strategic resource management, developing an entrepreneurial orientation helps organizations foster communication inclinations and practices. Therefore, entrepreneurial orientation can promote integrated communication within the organization (Reid et al., 2005) and improve core capabilities (Jin et al., 2018; Zahra et al., 2006). This study defines entrepreneurial orientation as an antecedent that can positively affect organizational communication (Butkouskaya et al., 2020; Chang, 2015).

Regarding the influence of communication on organizational performance, communication plays a pivotal role in transferring and elaborating information through multiple channels, including

verbal and non-verbal instruments (Garnett et al. 2008; Suh et al., 2018). In an organizational system, communication performs integrated functions that can lead to generating valuable assets and realizing procedural improvements, such as acquiring knowledge, sharing information, and establishing an organizational culture at all levels of the organization (Cuganesan et al., 2017; Kalla, 2005; Suh et al., 2018; Tantardini, 2019, 2022). For instance, Tantardini (2019, 2022) emphasizes how communication and communication channels allow organizations to attain, share, and allocate fundamental information to promote the quality of the decision-making process and reinforce the legitimacy of the decision (Tantardini, 2019, 2022). Likewise, Cuganesan et al. (2017) emphasize that communication from organizational leaders contributes to improving employees' self-efficacy through information sharing and stewardship (Cuganesan et al., 2017, p. 875). Those findings suggest how communication plays a crucial role in managing useful information resources in the organization, which explains the role of communication as one of the influential factors in performance, including efficiency and effectiveness in organizations. Accordingly, many studies conclude that communication is vital for enhancing the managerial capabilities of organizations as a strategic management practice (Ananda et al., 2018; Butkouskaya et al., 2020; Jin et al., 2018) and carrying out various managerial functions within organizations, including planning, creating, and developing services and products (Keyton, 2017). The literature recognizes two types of communication: vertical, which refers to top-down communication between managers and subordinates, as well as bottom-up communication from subordinates to managers, and horizontal communication across departments (Simpson, 1959). Top-down vertical communication may facilitate decision-making and enhance efficiency with clear instructions (Gbarale & Lebura, 2020); conversely, bottom-up vertical communication may encourage feedback and knowledge sharing, leading to better decision-making and increasing employee commitment (Zhang et al., 2020). Similarly, horizontal communication may enhance teamwork across the organization (Kim et al., 2016) and improve knowledge sharing (Yin et al., 2024). Both communication channels may then positively affect performance as shown in several studies (Kemal, 2024; Fadzil & Listyanti, 2024).

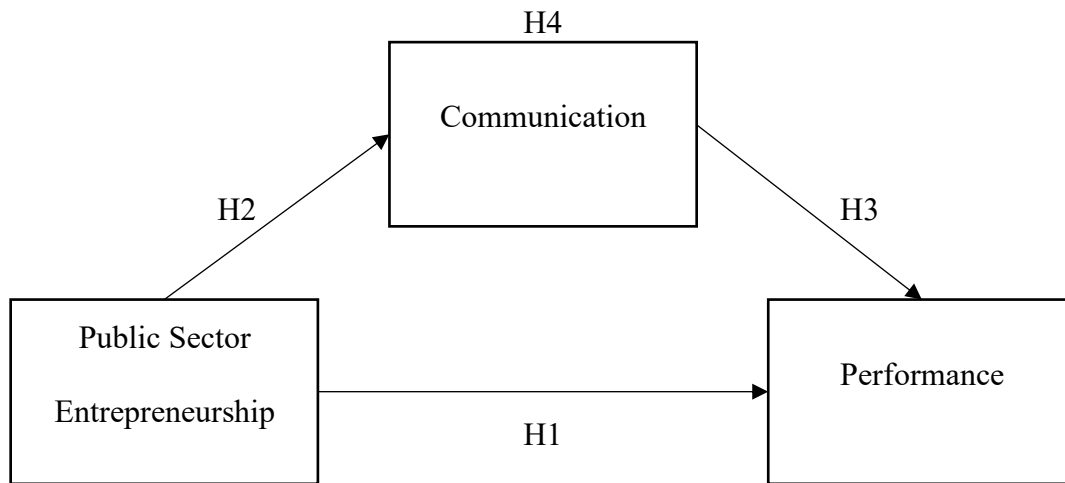
In terms of organizational change and development, which is one of the main perspectives of entrepreneurial orientation, communication can be used as a channel or a nexus that helps organizational members interact with other members, facilitating not only the sharing of useful knowledge and experience but also to fostering a sense of community that leads to functional improvements, such as organizational commitment, trust, responsiveness, and the like (Elving, 2005; Kalla, 2005; Keyton, 2017; Suh et al., 2018). Additionally, communication is vital in resource management embedded in the organizational process, promoting the exchange and integration of information and knowledge (Fang et al., 2018). In other words, communication is a strategic managerial technique for managing informational assets to improve organizational performance through accumulated knowledge-based assets (Ananda et al., 2018; Butkouskaya et al., 2020; Garnett et al., 2008; Hormiga & García-Almeida, 2016) as well as achieve innovative success (Chang, 2015). In sum, this study posits the following hypotheses and derives the following conceptual model based on these theoretical discussions.

Hypothesis 2: Public sector entrepreneurship is positively associated with communication.

Hypothesis 3: Communication is positively associated with organizational performance.

Hypothesis 4: Communication positively mediates the relationship between public sector entrepreneurship and organizational performance.

Figure 1. Conceptual Model



Data and Methods

Sample Data

To test the proposed hypotheses, this study employed data from the 2022 Public Employee Perception Survey produced by the Korea Institute of Public Administration (KIPA). This annual survey has been conducted under the supervision of the KIPA to create a database to promote research in the public sector. The purpose of this database is to provide public administration scholars and practitioners with essential information to improve the government's capacities and enhance the development of the administrative system by collecting various perception data, including various administrative features and aspects of the Korean government from public officials. Data collection was conducted in 2022, targeting general government officials affiliated with various levels of government, such as central administrative agencies, metropolitan autonomous bodies, and basic local governments in South Korea. The survey data includes some of the perceptions and features of public organizations at the individual and organizational levels, including work environment, personnel management, organizational citizenship behavior, public service motivations, organizational culture, leadership, and performance, which are associated with public management. Most survey questions, including public sector entrepreneurship, communication, and performance, were measured on a 5-point Likert scale (e.g., 1 = strongly disagree to 5 = strongly agree).

There are 6,170 respondents who participated in the survey. The survey population consists of public servants belonging to different levels of government, including central administrative agencies, metropolitan governments, and local government headquarters in South Korea. Since each level of government agency has different structural characteristics, such as size, number of employees, and number of departments, the sampling method that the survey used is stratified cluster sampling. Therefore, in this survey, each type of government is treated as a different subpopulation, and samples were selected independently from each subpopulation (Korean Institute of Public Administration, 2023). Table 1 shows the demographic breakdown of the samples employed in this study. The number of male respondents was 3,532, which accounts for 57.2 percent, while the number of female respondents was 2,638, which was 42.8 percent of the

total number of respondents. Most respondents were in their 30s (34.3 percent) and 40s (32.3 percent), which refer to the largest and second-largest groups in the age range of respondents. Of the total respondents, 3,767 (61.1 percent) were married, while the remaining 2,403 (38.9 percent) answered they were single. Most respondents had a bachelor's degree, counted 4,687 (76 percent), and 711 respondents had a master's degree (11.5 percent), which was the second largest group of respondents' education attainment. Regarding respondents' rank, more than 90 percent of the respondents are grade 9 to grade 5, and they mainly act as the general staff (grade 9 to 6) or the deputy directors (grade 5). Other specific characteristics and figures of the respondents in the survey can be found in Table 1.

Measures

Dependent Variable: Organizational Performance

The dependent variable in this study is the level of performance of the organization. As noted above, the level of performance was measured on a 5-point Likert scale based on perceptual data from the respondents, which refer to the result of the questions of performance, such as (a) “our organization has sufficiently achieved the performance goals,” and (b) “our organization’s performance has been evaluated as excellent in quality.” Like the contribution by Moon and colleagues (2020), these two perceptual measures of organizational performance have an inward focus (question a) and an outward focus (question b). Together, despite their limitations, these two measures may provide an acceptable representation of the performance of the organizations where our study participants work.

Independent Variables: Public Sector Entrepreneurship

The independent variable in this study refers to public sector entrepreneurship, which has significant effects on communication and organizational performance. To measure the level of public sector entrepreneurship, respondents were required to evaluate the level of entrepreneurial orientation in the organization on a 5-point Likert scale. Public sector entrepreneurship includes three questions on three dimensions: innovativeness, proactiveness, and risk-taking. For instance, respondents rated each statement on a 5-point Likert scale, such as (a) “our organization emphasizes creativity/innovativeness/challenge,” (b) “our organization is versatile and responds to changes immediately,” and (c) “our organization is willing to take risk in a way for innovation.” Those scores are operationalized by public sector entrepreneurship, which refers to one of the latent variables in the research.

Mediator: Communication

To measure the influence of communication within the organization, this study leverages two types of internal communication (Pandey & Garnett, 2006), including horizontal and vertical communications. For example, horizontal communication refers to peer-to-peer interactions, focusing on a lateral direction between similar levels within the organization. On the other hand, vertical communication emphasizes the hierarchical directionality of interactions, which includes upward and downward communications across different levels of units or departments (Bartels et al., 2010; Keyton, 2017). In fact, communication involves both verbal and non-verbal methods to distribute information or command for tasks, which foster performance in operations as well

Table 1. Characteristics of the Sample¹

		Frequency (%)
Gender	Male	3,532 (57.2)
	Female	2,638 (42.8)
	Subtotal	6,170
Age	20 to 29 years old	707 (11.5)
	30 to 39 years old	2,116 (34.3)
	40 to 49 years old	1,993 (32.3)
	50 to 59 years old	1,329 (21.5)
	Above 60 years old	25 (0.4)
	Subtotal	6,170
Marital Status	Single	2,403 (38.9)
	Married	3,767 (61.1)
	Subtotal	6,170
Education	High school degree	318 (5.2)
Attainment	Junior college degree	343 (5.6)
	Bachelor's degree	4,687 (76.0)
	Master's degree	711 (11.5)
	Doctoral degree	111 (1.8)
	Subtotal	6,170
Rank ¹	Grade 9 (the lowest)	658 (10.7)
	Grade 8	887 (14.4)
	Grade 7	1,702 (27.6)
	Grade 6	1,678 (27.2)
	Grade 5	1,002 (16.2)
	Grade 4	223 (3.6)
	Grade 3	14 (0.2)
	Grade 2	6 (0.1)
	Grade 1 (the highest)	0 (0)
	Subtotal	6,170

¹ According to the Ministry of Personnel Management in South Korea, grades 6-9 are referred to the general staff; grade 5 is deputy director, grades 3-4 are division directors, and grade 2 and above is senior civil service (SCS). (<https://www.mpm.go.kr/english/system/publicOfficials/>)

as a perceived cultural dimension within the organization (Garnett *et al.*, 2007). This research identifies communication as a mediator that is measured by two survey items. These items combined refer to the measurement of the level of communication within the organization. Specifically, respondents were required to answer two questions. The first question refers to the measurement of vertical communication, which is presented as (a) “In our organization, vertical communication is well operated in performing the tasks of the organization.” The second question implies horizontal communication, which is written as (b) “In our organization, horizontal communication is well operated in performing the tasks of the organization.” In the same way as the above questionnaire items, all questions corresponding to communication were measured on a 5-point Likert scale.

Common Method Bias: How to Treat the Potential Threat in This Study

Concerning the potential presence of systematic error variance within self-reported surveys, the current study considers the likelihood of encountering common method bias, which may arise when both independent and dependent variables are gathered from a single source, simultaneously involving the same respondents and questionnaires in the survey (Jakobsen & Jensen, 2015; Kock *et al.*, 2021; Podsakoff *et al.*, 2003). With regards to the statistical strategies employed to address the common method bias, researchers can conduct Harman’s single factor test either through a confirmatory factor analysis or an exploratory factor analysis (Jakobsen & Jensen, 2015; Kock *et al.*, 2021). According to Kock (2021), this test helps researchers ascertain the presence or absence of common method variance within the survey data. In general, Harman’s single factor test presents that “the percentage of variance associated with the first component (or factor), the one referring to the highest eigenvalue, is compared against the threshold of 0.5. Such percentage is also referred to as the “total variance explained” by the first component extended through the analysis” (Kock, 2021, p. 2). To detect any potential common method bias within the present research, this study undertakes Harman’s single factor test utilizing all survey items selected for this study. The result of Harman’s single test shows that the first factor encompassing all measurements explains 48% of the variance, which falls slightly below the established threshold of 0.5 (50%) (Kock *et al.*, 2021; Kock, 2021; Podsakoff *et al.*, 2003). Therefore, common method bias may not be a problem in this study.

Confirmatory Factor Analysis

To confirm the hypothesized structure of variables in this research model, we conducted a confirmatory factor analysis (CFA) for the three main variables: public sector entrepreneurship, communication, and performance, by using R (Version: 4.3.2.) and R studio (Version: 2023.12.0.369). Table 2 presents the validity and reliability of measurement in the model for structural equation modeling. In terms of the estimation of the goodness of fit for the model, there are several criteria with cut-offs to assess the goodness of fit (Browne & Cudeck, 1992; Hu & Bentler, 1999; Kyndt & Onghena, 2014; Xia & Yang, 2019). For example, the recommended value of Root Mean Square Error of Approximation (RMSEA) is .1, which means an RMSEA value should be less than .1 to verify the goodness of fit of the model. To be specific, Browne & Cudeck (1992) suggest that if a RMSEA score is less than .05, this result presents a “close fit,” and a score of less than .08 refers to a “reasonable model fit” (Kyndt & Onghena, 2014, p. 9; Xia & Yang, 2019, p. 409). Also, the comparative fit index (CFI) and Tucker-Lewis index (TLI) values should be greater than .95, and an SMRM value should be less than .08 to accept the goodness of model and data fit (Hu & Bentler, 1999). According to Table 2, all results of indicators in the research model are accepted to confirm that the model has a satisfactory level of goodness of the model fit.

Table 2. Results of Confirmatory Factor Analysis

	χ^2	df	CFI	TLI	RMSEA	SRMR
Cut off	p < .05		> .95	> .95	< .1	< .08
Model	354.455 (p=.000)	11	.981	.963	.071	.028

Evaluation of the Structural Model

The following part evaluates the fit of the structural model by using several indices, which helps assess the reliability and validity of the measurement instruments. Table 3 displays some of the results of the measurement model analysis, including factor loading score, composite reliability (CR), average variance extracted (AVE), and Cronbach's alpha. First, to measure the internal consistency and reliability of the latent factor in the model, this study calculates CR values for each latent factor. Table 3 indicates that all CR scores exceed .7, demonstrating that this measurement model has acceptable reliability for the latent construct (Hair et al., 2021, p. 77). Additionally, Cronbach's alpha is another criterion to measure the internal consistency of the latent model. Existing literature suggests that a threshold of .7 is acceptable. As shown in Table 3, all values of Cronbach's alpha in the model reach the acceptable threshold, confirming they are greater than .7.

Table 3. Results of the Assessment of the Structural Model

Latent factor	Variable (Item)	Factor Loading	SE	p-value	CR	AVE	Cronbach alpha
Entrepreneurs hip	1. Our organization emphasizes creativity/innovativeness/challenge	.606	.009	.000	.786	.555	.776
	2. Our organization is versatile and responds to changes immediately	.863	.006	.000			
	3. Our organization is willing to take risks in a way for innovation	.754	.007	.000			
Communication	1. In our organization, vertical communication is well-operated in performing the tasks of the organization	.780	.008	.000	.721	.565	.717
	2. In our organization, horizontal communication is well-operated in performing the tasks of the organization	.719	.008	.000			
Performance	1. Our organization has sufficiently achieved the performance goals	.827	.007	.000	.748	.597	.747
	2. Our organization's performance has been evaluated as excellent in quality	.731	.008	.000			

Second, in terms of assessing the convergent validity of the model, AVE provides the criteria for whether the measurement model meets good convergent validity. In order to determine the validity of the model, each AVE value should exceed at least .5, which refers to the minimum acceptable level for convergent validity (Hair et al., 2021, p. 78). In this model, all AVE values are greater than .5, and those results explain that this model has an acceptable level of convergent validity.

Third, when it comes to factor loading, this value refers to the indicator reliability of the measurement model. Considering the cut-offs of factor loading, Hair et al. (2021) suggest a value of .7, which is the acceptable level to conduct CFA. However, other scholars argue that the recommended cut-off of factor loadings is .6, which pertains to the acceptable level for indicator reliability (MacCallum et al., 2001; Tabachnick et al., 2019). Table 3 presents that most of the values of factor loading are greater than .7, except the factor loading of the item of innovativeness (first row). However, this factor loading is greater than .6, which presents a satisfactory level of indicator reliability. In conclusion, based on the results of the evaluation of the structural model derived from several parameters, this model achieves the acceptable fit to conduct a path analysis in structural equation modeling.

Results and Discussion

Diagnostic Test for Multivariate Normality

To test the hypotheses on the influences of public sector entrepreneurship, communication, and performance, this study conducts a path analysis for the research model. Considering the normality of the statistical model, this study conducts Mardia's test for multivariate normality by using "Mardia" package in R. This diagnostic test calculates the statistics of skewness and kurtosis for the data as well as univariate normality for each variable (Mardia, 1970). Table 4 displays the results of the normality test for the data.

Table 4. Results of Test for Multivariate Normality

	Indicator	Statistic	p-value
Multivariate	Mardia Skewness	1664.223	<. 001
Normality	Mardia Kurtosis	47.636	<. 001
Anderson-	Innovativeness	283.062	<. 001
Darling Test	Proactiveness	298.248	<. 001
for Univariate	Risk-Taking	300.963	<. 001
Normality	Vertical Communication	312.832	<. 001
	Horizontal Communication	378.509	<. 001
	Inward-focused Performance	488.403	<. 001
	Outward-focused Performance	338.380	<. 001

From the results, both p-values of Mardia skewness and kurtosis are less than .05, indicating that the assumption of multivariate normality is violated in the data. In addition, for univariate normality, the results of Anderson-Darling test show that all variables significantly deviate from the normality because all indicators have p-values less than .001.

Path Analysis for Hypotheses Testing

Regarding the mediating effect of communication, this study considers the statistical method for the non-parametric model due to the violation of multivariate normality in the statistical model. To be specific, this study performs a bootstrapping procedure ($n = 2,000$) to calculate an accurate standard error of the indirect effect in this model, which helps address the violation of normality in the data (Preacher & Hayes, 2008). The bootstrapping method offers benefits for structural equation modeling by eliminating the need for normality assumptions. This approach enables the calculation of more accurate confidence intervals and enhances statistical power when testing mediating effects, serving as an alternative to the Sobel test for evaluating mediation models with non-parametric statistics (Shrout & Bolger, 2002). Table 5 presents the results of the path analysis that reports direct and indirect effects among variables in this study. In terms of significance probabilities in this model, all coefficients are statistically significant, which concludes that all research hypotheses are accepted.

Regarding the interpretation of the results, hypothesis 1 focuses on the direct effect between public sector entrepreneurship and performance. According to the results, public sector entrepreneurship has a positive effect on organizational performance ($0.362, p < .001$). Hypothesis 2 postulates that there is a positive relationship between public sector entrepreneurship and communication. In accordance with the results in Table 5, public sector entrepreneurship positively affects communication ($.762, p < .001$). Hypothesis 3 demonstrates that communication is positively associated with an increase in organizational performance. The third result in Table 5 shows that communication is related positively to performance ($.543, p < .001$).

Table 5. Results of Path Analysis

Path	Independent	Path	Dependent	Coefficient	SE	ci.lower	ci.upper
H1	Entrepreneurship	→	Performance	.362***	.031	.302	.423
H2	Entrepreneurship	→	Communication	.762***	.012	.738	.786
H3	Communication	→	Performance	.543***	.032	.480	.606

All coefficients are standardized estimates.

* $p < .05$; ** $p < .01$; *** $p < .001$.

In respect of an indirect effect in the model, the coefficient of indirect effect can be calculated by multiplying two path coefficients as following formula: Indirect effect = $a \times b$, a: path coefficient from X (entrepreneurship) to Mediator (communication); b: path coefficient from Mediator to Y (performance). Based on the formula, the indirect effect is equal to $.762 \times .543 = .414$. Table 6 reports that the relationship between public sector entrepreneurship and performance is statistically significant under the mediating effect of communication and the coefficient value of

the direct relationship between public sector entrepreneurship and performance (.362, $p < .001$) is less than the coefficient value of indirect effect (.414, $p < .001$). Therefore, this result indicates that communication has a partial mediation effect on the relationship between public sector entrepreneurship and performance. Regarding the total effect in the model, the total effect should be equal to the sum of the direct (.362) and indirect (.414) effects; thereby, the coefficient of the total effect is .776, highlighting a strong influence on performance. In conclusion, all the hypotheses proposed in the study are statistically significant, and communication positively mediates the relationship between public sector entrepreneurship and performance. Figure 2 illustrates a schematic plot to provide the results of path analysis at a glance.

Table 6. Results of Indirect and Total Effects

Path	Independent	Path	Dependent	Coefficient	SE	ci.lower	ci.upper
H4	Entrepreneurship	→	Performance	.414***	.026	.362	.465
Total				.776***	.012	.753	.799

All coefficients are standardized estimates.

* $p < .05$; ** $p < .01$; *** $p < .001$.

Figure 2. Schematic Diagram of Path Analysis

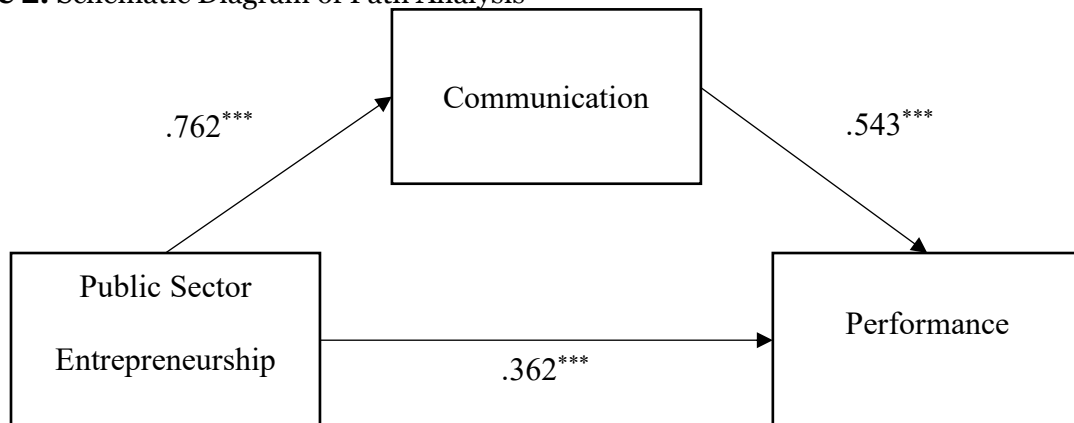


Table 7. Summary of Hypotheses Test Results

	Hypothesis	Result
H1	Public sector entrepreneurship is positively associated with public organizations' performance	Accepted
H2	Public sector entrepreneurship is positively associated with communication	Accepted
H3	Communication is positively associated with organizational performance	Accepted
H4	Communication positively mediates the relationship between public sector entrepreneurship and organizational performance	Accepted

Discussion and conclusion

Implications and Limitations of the Study

Based on existing literature, this study investigated the dynamics among public sector entrepreneurship, communication, and performance and tested this model using structural equation modeling. While prior research has explored the direct linear relationships between these variables, this study presents new insights that enrich our understanding of the interconnections among the three factors. First, this study reveals that public sector entrepreneurship is a significant antecedent of communication. According to the resource-based view (Barney, 2001; Ireland et al., 2003), public sector entrepreneurship can be one of the strategic initiatives to identify and leverage available resources. Communication can be vital to managing secured resources, especially information and knowledge. Therefore, to effectively manage resources for organizational development, entrepreneurial organizations should utilize communication as a managerial channel to deliver, modify, and integrate information resources (Chang, 2015; Gochhayat et al., 2017). Hence, as previously mentioned, adopting an entrepreneurial orientation in the public sector can enhance internal communication to better acquire and manage additional resources.

Second, this study found that communication positively mediates the relationship between public sector entrepreneurship and performance. Building on extant research, this study suggests that public sector entrepreneurship and communication have positive effects on organizational performance. Also, considering the role of communication in this model, this study finds that communication positively moderates the relationship between public sector entrepreneurship and performance. This result demonstrates the significant role of communication in promoting organizational performance in an entrepreneurial manner. These findings offer a fresh perspective on adopting an entrepreneurial orientation in the public sector, benefiting both public administration scholars and practitioners. This explains how public organizations can effectively leverage public sector entrepreneurship to improve organizational performance through well-structured communication channels within organizations.

Despite the significance of the implications, this study also has limitations that should be considered. First, while the determinants of organizational performance vary, this study only focuses on the influence of entrepreneurship and communication on performance. Even though the proposed conceptual model is statistically verified, this study does not control other latent variables that may have an impact on the model. To address this limitation, future research should consider conducting a systematic literature review and employing pertinent statistical methods for an advanced research model. Second, this study does not consider unintentional influences of the structural characteristics of each organization and the specificity of administrative culture in South Korea. For example, Moon et al. (2020) posit that Confucian culture, which refers to one of the representative cultural aspects of Korean society, has a significant influence on entrepreneurship and performance in the public sector. Those exogenous influences that were not treated in this study can threaten the validity and reliability of the research model and distort statistical results. Third, this study acknowledges there are significant methodological limitations in this study due to the inherent characteristics of the survey data. For instance, this study measures the level of organizational performance based on perceptual measurements, which can lead to conflicting interpretations of statistical results. To address the potential threats, future research should consider the usage of different data sources and/or the separation of data collection (Jakobsen & Jensen, 2015), as well as the inclusion of more comprehensive (perceptual) measures of organizational performance and/or the inclusion of objective performance measures. Fourth, this study emphasizes the notions of communication as a core mechanism for knowledge

sharing and information distribution within the organization, contributing to promoting government performance. However, this study fails to clearly articulate how communication effectively leads to high performance in entrepreneurial settings due to the use of oversimplified measures of communication. Specifically, communication is a comprehensive and complex concept that not only refers to verbal and non-verbal interactions among members but also determines other salient features of the organization system, such as procedural routines, structural formations, cultural contexts, and leadership styles. Those multifaceted concepts of communication require in-depth theoretical and analytical backgrounds in investigating the functions of communication to identify latent influences and outcomes. To deal with a lack of justification in measuring communication in this study, future research should provide more rigorous theoretical discussions and rational indicators, encompassing various aspects of communication. Finally, additional research questions can also be developed in the area of public sector entrepreneurship, particularly concerning the most effective communication forms and leadership styles within the public sector context. Investigating whether different communication strategies vary according to various leadership styles or specific public sector organizations or policy areas would be worthwhile.

In conclusion, this study expands on the implications of existing research on the link between public sector entrepreneurship and performance. It also introduces a new empirical research model, including communication as a mediator. These academic contributions can not only provide public administration scholars with a new insight into the dynamics between public sector entrepreneurship and other variables but also give practitioners a new managerial alternative to improve organizational performance through the implementation of public sector entrepreneurship along with effective communication within an organization.

Disclosure Statement

The authors declare that there are no conflicts of interest that relate to the research, authorship, or publication of this article.

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