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RESEARCH ARTICLE

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Public sector innovation for sustainable development goals: A comparative study of innovation types in Thailand and Korea

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Abstract

The aim of this paper is to compare the focus (strategy, capacity, and operation) and locus (internal and external) of innovation types of Sustainable Development Goals (SDGs)-oriented public sector innovation (PSI) in Thailand and Korea and to contribute to the limited understanding of the role of national context in PSI. Our study analysed 263 SDGs-oriented innovations based on the new typology proposed by Chen et al. The findings identified that the orientation of SDGs-oriented PSI is more external and policy innovation is the most common type in both countries. These distributions, however, vary depending on the contextual differences in administrative and technological contexts, resulting in SDGs-oriented PSI in Korea emphasised on strategy focus, whereas Thailand emphasised capacity focus. This also demonstrates a temporality between strategy, capacity, and operations foci in Korea, but Thailand attempted to fill the capacity gap through SDGs-oriented innovation. Insights from this empirical study can assist public managers in selecting innovation portfolio configurations applicable to their national context.

KEYWORDS
comparative study, innovation types, Korea, public sector innovation, Thailand

Points for practitioners

- In executing public sector innovation, public sector organisations (PSOs) should consider the innovation focus (strategy, capacity, and operation) and the innovation locus (internal and external).
- For SDGs-oriented innovation, mission and policy innovation should introduce the necessary strategies in the public services before capacity and operation focus.
- Public managers and practitioners should adopt an innovation portfolio approach to develop and introduce a variety of innovation types.
- Public managers should consider their national context to select the configuration of their innovation portfolios.

1 | INTRODUCTION

Increasingly, governments across the world are interested in public sector innovation (PSI) to address critical challenges and wicked problems, such as climate change, disruptive technology, austerity, and pandemic conditions (Demircioglu, 2020; Torfing, 2019). Hence, innovation is regarded as an important means for public organisations to improve their effectiveness or efficiency, maintain their legitimacy, gain citizen trust, and respond to the expectations of multiple stakeholders (de Vries et al., 2016; Molloy et al., 2023; Sørensen & Torfing, 2019).

This has resulted in a growing body of literature on PSI, studying a variety of concepts, including innovation adoption and diffusion, drivers and barriers, innovation characteristics and types, collaborative innovation, and innovative outcomes (e.g. Al-Noaimi et al., 2022; Chen et al., 2020; Cinar et al., 2019; Damanpour & Schneider, 2009; de Vries et al., 2016; Park et al., 2021; Vivona et al., 2023; Wu et al., 2013). There is a consensus in the literature on the complex nature of innovation within governments and the need to develop classification schemes to conceptualise the diversity of innovation characteristics, since achieving different organisational goals requires different innovations and each innovation type may be driven by different factors (Osborne & Brown, 2011).

Within the literature, a variety of PSI typologies have been proposed (e.g. Bloch & Bugge, 2013; de Vries et al., 2016). Chen et al. (2020) reviewed comprehensively the existing typologies of PSI and posited that existing typologies could not capture the nature of the public sector context. This resulted from the origins of prior typologies in the private sector that overlooks public value

objectives and their failure to reflect the significance of the New Public Governance (NPG) paradigm which places a greater emphasis on public value goals with an external focus. This led Chen et al. (2020) to propose a new typology consisting of six innovation types (mission, policy, management, partner, service, and citizen innovation). Their typology was derived from two dimensions reflecting the character of public organisations and their public value creation: (i) innovation focus (operation, strategy, and capability) and (ii) innovation locus (external and internal). They also demonstrated the applicability of their typology by presenting empirical evidence from American government organisations. This new conceptualisation can capture the public value processes analytically as well as the distinction between internal and external orientation. Hence, it fits well with the first objective of this study, which is to understand which public value activities are prioritised and which orientation is preferred while Sustainable Development Goals (SDGs)-related innovation is developed and introduced in the public sector (Mariani et al, 2022; Raffer et al., 2022).

The second objective of our research is informed by Chen et al.'s (2020) future research agenda to test the robustness of the new typology in Asian contexts, as well as Van der Wal and Demircioglu's (2020) call to uncover what types of innovation Asian PSOs focus on, because Asia–Pacific region governments are regarded as *frontrunners in the development, adaptation, and diffusion of new technologies and practices* (Van der Wal & Demircioglu, 2020, p. 273). Finally, research that compares PSI across different countries remains lacking, leading to a lack of comprehensive understanding of national contextual differences (Cinar et al., 2019; de Vries et al., 2016), where contextual variables are important in a comparative study of public management (Demircioglu, 2020). For example, Cinar et al. (2022b) empirically uncover that national context can lead to diverse innovation type configurations. These reasons lead us to compare the focus and locus of PSI types in two Asian contexts, Thailand and South Korea, to examine how national context differences may play a role in PSI.

In order to examine the types of SDGs-oriented PSI in different contexts, our study analyses 263 initiatives that focused on the SDGs submitted for the United Nations Public Service Award (UNPSA) between 2018 and 2021 from Thailand and South Korea. Our findings make three contributions to the PSI literature. First, the research provides further understanding of how SDGs-oriented PSI is developed and introduced in two specific contexts. This also reveals that the new classification of PSI by Chen et al. (2020) is applicable to SDGs-oriented PSI in the Asian context. Second, these findings allow us to comprehend the significance of the national context to PSI uncovering that different administrative and technological contexts result in SDGs-oriented PSI in Korea concentrated on strategy focus, while Thailand targeted capacity focus. Additionally, the social context influences the SDG-focused PSI, especially on policy innovation in both countries. Third, our study enables public managers to benefit from the analysis provided herein by comparing two Asian countries and can be utilised in establishing their innovation portfolios.

The remainder of the article is organised as follows: the second part provides a framework to understand PSI and explores some of the existing PSI classifications, followed by the methodology used in this study, which comprises the data source and coding methods. Then, we present and discuss our findings. The paper ends with s conclusions and limitations.

2 | INNOVATION TYPOLOGIES

The PSI literature is yet to provide a generally agreed definition of PSI (de Vries et al., 2016). For this study, we adopt Chen et al.'s (2020, p. 1677) definition as: the development and implementation of

a novel idea by a PSO to create or improve public value within an ecosystem. Considering the complex nature of innovation, understanding different types of innovation is essential to developing innovations in public organisations (Walker, 2006). This complexity has led numerous scholars to study the categorisation of PSI.

Following an analysis of the literature on the public and private sectors, Hartley (2005) proposed a typology of seven categories: product innovation (new products), service innovation (novel approaches for serving users), process innovation (a new approach to the creation of organisational processes), strategic innovation (new organisational objectives), rhetorical innovation (new oratorical and ideas), position innovation (new clients), and governance innovation (new model of public participation).

Simultaneously, Walker (2006) examined the types of innovation and diffusion throughout English local government and identified five types of innovation. First, product innovations are regarded as new products or services. Second, three types of process innovations were identified, consisting of two technological (internally focused on information and communication technology (ICT) and externally focused on service delivery) and one organisational (focusing on management methods and organisational structure). Finally, partnerships with other organisations formed the focus of ancillary innovations.

Windrum (2008) developed a taxonomy of PSI based on prior research, which comprised six categories. The initial three types, service innovation (the creation of new services), service delivery innovation (new methods of providing public services), and administrative and organisational innovation (modifying operation procedures and organisational structure), have been investigated in innovation within the private sector, whereas the remaining three types reflect the public sector characteristics. Conceptual innovation is the introduction of new missions that support current organisational forms, services, and processes. Policy innovation is defined as a change in the thought or behavioural intentions associated with a policy belief system (Windrum, 2008, p. 10). Finally, systemic innovation represents a new or modified means of interacting with other organisations (Windrum, 2008).

Wu et al. (2013) conducted research on PSI typology in China by utilising five innovation typologies that consider public sector characteristics. Firstly, the authors used service innovation instead of product innovation because the government sector is more concerned with delivering public services than with producing products. They divided process innovation into management and technology innovation, with the former referring to the change of organisational structures and processes and the latter focusing on the novelty of service-delivering technology. Additionally, governance innovation is related to the administration of democratic institutions, the encouragement of public participation, and the fight against corruption. Finally, collaborative innovation is described as cross-organisational (e.g. alliances and partnerships) activities in service delivery and management processes.

Based on an extensive assessment of the results of a systematic review of literature, de Vries et al. (2016) categorised four different types of PSI. First, process innovation focused on the development of standards and performance of internal and external processes. Second, product or service innovation is defined as the production of brand new public goods or services. Third type is governance innovation, which refers to the establishment of new models and methods to enhance participation, transparency, and accountability. Finally, conceptual innovation is associated with the introduction of new conceptions, paradigms, or points of reference that help in identifying the essence of specific problems and their feasible solutions.

Queyroi et al. (2020) adopted five categories of local public innovations from current literature to investigate innovations adopted by French local governments. These are (i) services, (ii)

organisational–structural, (iii) organisational–practical, (iv) technological, and (v) strategic and governance innovation. The strategic and governance innovation was formed in response to a lack of innovation analysis in the planning and execution of public policies in previous innovation classifications.

Cinar et al. (2022b) conducted a comparison of innovation types in Italy, Japan, and Turkey in order to examine the effect of the national context in PSI. They utilised the five innovation types proposed by de Vries et al. (2016) and added two categories to cover the characteristics of government innovation—first, systemic innovation, which creates new ways of interaction between citizens and organisations; second, social innovation, which aims to meet social needs and address wicked social problems.

Chen et al. (2020) criticised these classifications and propose six types of innovation classifications: (i) mission, (ii) policy, (iii) management, (iv) partner, (v) service, and (vi) citizen innovation (see Table 2). These categories were derived from two features that characterise public service organisations: (i) innovation focus, which refers to three main processes for producing public value: operation, capacity, and strategy; (ii) innovation locus refers to the organisation's internal and external orientation. The main arguments in the new typology are that prior classification attempts did not reflect the nature of public value creation processes within PSOs and some suffer from the overlap among categories. More importantly, current typologies cannot reflect the growing focus on external orientation and collaborative innovation (Table 1). Furthermore, Chen et al. (2020, p. 1682) suggested that 'the authorisation process ensures that an organisation's mission reflects the desires of legitimate political authority and defines the type of services offered. To maintain its capacity, an institution seeks to improve its administrative procedures and relationships with partners. To ensure mission effectiveness, an organisation seeks to improve its operating value'. Thus, there is a temporal relationship between these three foci. Based on these arguments, they suggested six different types of innovations as described below:

1. Mission innovation is the creation of new goals, objectives, or paradigms of the organisation internally. Strategic procedures in the development of organisational values are involved in this new paradigm shift, which may include responding to the demands of politicians or governors that influence organisational missions. Mission innovation has similarities with some innovation types proposed previously, such as strategy referring to new organisational goals (Hartley, 2005), and conceptual innovation, which focuses on new world views that support current products, services, processes, and organisational structures (Windrum, 2008).
2. Policy innovation has an external orientation and is a set of principles involving stakeholders or citizens that offer new benefits, obligations, or regulations to solve specific social issues with a strategic focus (Chen et al., 2020). As a result of more complicated and demanding citizen needs and policymaking processes, Torfing and Ansell (2017) assert that policy innovation is urgently required. This aims to introduce new policy approaches, governance structures, and policy tools to solve wicked policy problems.
3. Management innovation is a frequent type discussed in the literature (e.g. Hartley, 2005; Walker, 2006). It is the improvement of an organisation's internal capacity to achieve its goals through the implementation of new management practices, structures, techniques, or processes to achieve the organisation's goals, which are frequently linked to important public administration reforms, notably the New Public Management (NPM) and e-government (Chen et al., 2020; de Vries et al., 2016; Walker, 2006).
4. Partner innovation arises when an organisation strengthens its capabilities through cooperating with others, concentrating on the external locus (Chen et al., 2020). This differs from

TABLE 1 Some of the major studies on innovation typologies.

Authors	Innovation type	Origin		Orientation	
		Private sector	Public service	Internal	External
Hartley (2005)	• Product innovation • Service innovation • Process innovation • Strategic innovation • Rhetorical innovation • Position innovation • Governance innovation	Primary	Partial	Primary	Partial
Walker (2006)	• Product innovation • Ancillary innovation • Process innovation - Technological innovation: information technology and communication (ITC) - Technological innovation: market - Organisational innovation	Primary	Partial	Primary	Partial
Windrum (2008)	• Service innovation • Service delivery innovation • Administrative and organisational innovation • Conceptual innovation • Policy innovation • Systemic innovation	Partial	Partial	Primary	Partial
Wu et al. (2013)	• Service innovation • Technological innovation • Management innovation • Collaborative innovation • Governance innovation	Partial	Primary	Primary	Partial
de Vries et al. (2016)	• Process innovation (administrative and technological innovation) • Product or service innovation • Governance innovation • Conceptual innovation	Primary	Partial	Primary	Partial

(Continues)

TABLE 1 (Continued)

Authors	Innovation type	Origin		Orientation	
		Private sector	Public service	Internal	External
Queyroi et al. (2020)	• Services innovation • Organisational–structural innovation • Organisational–practical innovation • Technological innovation • Strategic and governance innovation	Primary	Partial	Primary	Partial
Cinar et el. (2022b)	• Service innovation • Administrative process innovation • Technological process innovation • Conceptual innovation • Governance innovation • Systemic innovation • Social innovation	Primary	Partial	Primary	Partial

TABLE 2 Six types of innovations (Chen et al., 2020).

Focus	Locus	Innovation	Definition
Strategy	Internal	Mission innovation	The creation of a new purpose, mission, or viewpoint of the organisation
	External	Policy innovation	The presentation of new benefits and duties to stakeholders in order to tackle social challenges
Capacity	Internal	Management innovation	The implementation of new internal management, practices, structure, procedures, or technology in order to enhance the organisation's capacity to achieve organisational objectives
	External	Partner innovation	The formation of new alliances in order to strengthen the organisation's capacity to achieve organisational goals
Operation	Internal	Service innovation	The introduction and providing new services to achieve the goals of the organisation
	External	Citizen innovation	The development of a new platform to enable co-creation or co-production of citizens to achieve organisational goals

other types of innovations in that it is highly dependent on circumstances beyond the control of an organisation and its effective implementation is likely to depend on other parties outside the organisation (Walker, 2014). Partner innovation is comparable to Walker's (2014) ancillary innovation and Wu et al.'s (2013) collaborative innovation, in that they are concerned with operating across borders with other organisations, whether they are private enterprises, other public agencies, service providers or users, as well as non-governmental organisations (NGOs). Building alliances allows an organisation to extend its capabilities by obtaining access to the talents of its partners. Instead of inventing a new administrative function, an organisation may cooperate with another that already has such a function (Hartley et al., 2013).

5. Service innovation, which is plentiful and clearly defined in PSI literature (e.g. Bloch & Bugge, 2013; de Vries et al., 2016), is described as the creation and provision of new services which could be accomplished by the organisation's capabilities to achieve the organisation's goals (Chen et al., 2020). This innovation comprises offering new services to current or future consumers, and also offering existing services to new users (Walker, 2006).
6. Citizen innovation is a new type suggested by Chen et al. (2020) and defined as a new externally oriented approach to enable the involvement of citizens in the operations and delivery of public services, with the citizen shifting from passive receivers of services to proactive co-creators of services.

3 | METHODOLOGY

This study utilises the application forms of UNPSA as the data source to examine the SDGs-oriented PSI typology in an Asian context: Thailand and South Korea, which differ in terms of their economies, strategic agendas, administrative systems, and bureaucratic capacities. We follow the literature that utilised award applications as a data source (e.g. Chen et al., 2020; Wu et al., 2013) and particularly from UNPSA (e.g. Cinar et al., 2021, 2022b, 2023). Established in 2003, UNPSA is a prestigious international public service award to enhance the public service's

function, professionalism, and visibility. Applicants complete an online application form detailing qualitative information about the problem, purpose, innovation content, stakeholders, obstacles, evaluation, and outcomes. Since 2018, the UN prioritises the criteria that submitted innovations should target SDGs and applicants need to describe what SDGs and targets the initiative supports. UNPSA illustrates examples of PSI focusing on SDGs and best practices in specific contexts.

The published initiatives pass through four stages. First, the main application criteria (e.g. public sector origin, SDGs, implementation of 2 years minimum) is evaluated at the pre-screening stage, and nominations that do not meet the criteria are disqualified. Subsequently, the applications are assessed by staff of the United Nations Department of Economic and Social Affairs (UN DESA), and the United Nations Entity for Gender Equality and the Empowerment of Women (UN Women). Those with an average score of 70% or higher proceed to a further evaluation round. In the third round, short-listed initiatives are submitted to a working group of members of the UN Committee of Experts of Public Administration (CEPA) who conduct the final review and selection. Subsequently, a process of verification and validation is carried out to ensure that the nomination paperwork and implementation are consistent (UN, 2018).

Since 2007, the UN openly published all applications selected for the final round of evaluation by the CEPA. There are 169 initiatives from Thailand and 94 initiatives from South Korea, 263 applications in total for the analysis, between 2018 and 2021. A total of 63% and 28% came from central government organisations from Thailand and Korea, respectively, whilst 37% and 72% came from local government organisations. This reflects the administrative structure in both countries (see Table 3). Therefore, we argue that UNPSA forms a good data source to reflect SDGs-oriented PSI in both countries and to study the new typology of PSI for SDGs.

This study adopts quantitative content analysis (Krippendorff, 2013) to examine the open questionnaires, which offered rich qualitative data on PSI. At the first step of content analysis, the first author read all cases to understand the content and familiarise themselves with the data whilst taking notes. The second step was coding. In each case, first, the specific organisation that implemented the innovation was identified to understand the level of analysis and then the core innovative idea was examined and coded into a single category, following the coding book and coding protocol by Chen et al. (2020)[1]. As a result, the different categories are mutually exclusive. All cases were coded through NVivo qualitative data analysis software, Version 12. The first author coded all cases and presented the results and coding in the research meetings. Subsequently, the second author coded all cases and an inter-coder agreement was calculated via utilising the Holsti co-efficient of agreement (Neuendorf, 2016, p. 149). The initial inter-coder agreement was 82.5%. After discussing and addressing the differences through several meetings and cooperative coding, complete agreement was established. NVivo's cross-tab function was used to develop final percentages displayed on Table 4. Coded examples of each type of innovation are presented in Table A1.

3.1 | Research context: Thailand and Korea

This section provides an overview of the two country contexts studied, which examines Thailand, a Southeast Asian and economically an upper-middle-income country, and South Korea, an East Asian and high-income country.

Thailand is a parliamentary democracy with a constitutional monarchy. Its public administration comprises three main levels: central, regional, and local. For regional administration, the Ministry of Interior nominates provincial governors and district chiefs who are central

TABLE 3 Context characteristics of Thailand and Korea.

	Thailand	Korea
Region	South-Eastern Asia	Eastern Asia
Population*	71.60 (million)	51.74 (million)
Urban population* (% of total population)	52%	81%
Income group	Upper middle-income	High-income
GDP per capita*	$7066	$34,997
Real GDP growth*	1.5%	4.1%
Reform history	1997 (IMF economic crisis)	1997 (IMF economic crisis)
Systems of governance	Parliamentary democracy with a constitutional monarchy	Democratic republic, Presidential system with a prime minister
Local–central configuration of public sector employees (central:local)	82:18**	64:36***
Administrative structure	Highly centralised	Centralised
Strategic priorities	'The 20-year National Strategy (2018–2037)' ****Vision: 'Thailand becomes a developed country with security, prosperity and sustainability in accordance with the Sufficiency Economy Philosophy' 1. Creating national security for public contentment 2. Enhancing different capacities to promote constant economic development 3. Promoting multidimensional human capital development for righteous, skilful, and quality citizens 4. Broadening opportunities and promoting equality in society 5. Improving quality of life based on green growth 6. Reforming public administration with a focus on public interest	'Five-year Plan of the Moon Jae-in Administration (2017–2022)'*****Vision: 'A Nation of the People, A Just Republic of Korea' 1. A Government of the People 2. An Economy Pursuing Mutual Prosperity 3. A Nation Taking Responsibility for Each Individual 4. Well-balanced Development across Every Region 5. A Peaceful and Prosperous Korean Peninsula
Administrative reform framework for public administration	'Government 4.0'****** 1. Open and Connected Government 2. Citizen Centric Government 3. Smart and High Performance Government	'Open government partnership: Korea's 4th national action plan (2018–2020)'******* 1. Enhancing transparency 2. Fighting corruption 3. Empowering citizens 4. Harnessing new technologies to strengthen governance

(Continues)

TABLE 3 (Continued)

	Thailand	Korea
Social context	• Poverty • Rural–urban income gap • Insufficient and inequitable distribution of healthcare services	• Ageing population • Urbanisation • Gender pay gap
Global Innovation Index, GII 2017 • Government effectiveness ranking	50	34
• ICTs ranking	71	2
• Government online service	77	5

Abbreviations: ICT, information and communication technology; IMF, International Monetary Fund.
Sources: *https://www.worldbank.org/ (2021); **Office of the Civil Service Commission (OCSC) (2018); ***Ministry of Personnel Management (MPM) (2018): ****Office of the National Economic and Social Development Board (NESDB); *****The Government of the Republic of Korea (2017); ******Office of the Public Sector Development Commission (OPDC); *******The Government of the Republic of Korea (2018)

government officials, whereas chief executives (chairman or mayor) and legislatures (council) of local administration organisations are directly elected by the local residents (Haque, 2010). Despite the introduction of significant decentralisation schemes in the late 1990s, Thailand remains highly centralised due to the Ministry of Interior controlling province and district levels (Unger & Mahakanjana, 2016), and the central government influencing the decisions and operations of local government administration (Haque, 2010). In addition, the number of civil servants in the central government is still significantly larger (which accounts for roughly 82% of the total) than that of local governments (OCSC, 2018).

South Korea has a democratic government, with the president as the head of the country. Korean administration is divided into central and local levels. The local government is separated into two levels: regional or upper level and municipal or lower level. Despite the decentralisation attempts started almost three decades ago, the central government wields significant authority and influence over local governments. This renders them inferior to national governments and they are not truly self-governing, because the Local Autonomy Act (LAA) authorises the federal government to intervene in local government operations (Choi et al., 2013). Compared to Thailand, there is less difference between the numbers of officials in the central government and local governments (MPM, 2018; OCSC, 2018).

The most noticeable government reforms in both countries emerged during the 1997 economic crisis, forcing both countries to seek bailouts from the International Monetary Fund (IMF), which demanded a significant shift in financial policies (Huque & Jongruck, 2020; Kim & Han, 2015). Whilst Korea has a smaller population (52 million) than Thailand (71 million), it has a significantly higher proportion of urban residents.

Our rationale for selecting these two countries for a comparative study is informed by the limited number of PSI studies from the Asia–Pacific region, particularly Thailand. In addition, South Korea experienced rapid and sustained economic growth becoming a developed nation over the past 70 years. Korea accomplished a notable economic leap from one of the poorest countries (Jung, 2019) to becoming the 10th largest economy in the world in 2020 (worldbank.org).

TABLE 4 Distribution of different types of innovation.

		Innovation locus									
		Internal				External			Total		
			Thailand	Korea	United States (Chen et al., 2020)		Thailand	Korea	United States (Chen et al. 2020)	Thailand	Korea	United States (Chen et al. 2020)
Innovation focus	Strategy	Mission innovation	6.5%	8.5%	6.0%	Policy innovation	26.6%	36.2%	12.0%	33.1%	44.7%	18.0%
	Capacity	Management innovation	18.9%	12.8%	32.0%	Partner innovation	16.0%	7.4%	18.0%	34.9%	20.2%	50.0%
	Operation	Service innovation	14.8%	17.0%	25.0%	Citizen innovation	17.2%	18.1%	7.0%	32.0%	35.1%	32.0%
	Total		40.2%	38.3%	63.0%		59.8%	61.7%	37.0%			

Furthermore, Korea represents a highly innovative country. In 2021, it was placed first on the Bloomberg Innovation Index (European Commission, 2021) and it is well-known in PSI for being ranked first in the Government online service (Global Innovation Index 2021 [https://www.globalinnovationindex.org/]). Thailand, on the other hand, is a developing country, ranked 36th on The Bloomberg Innovation Index (European Commission, 2021), and has been attempting to escape the middle-income trap. Table 3 identifies how both countries differ in various respects, including GDP per capita, administrative structure, and strategic priorities. This further informs the rationale for our comparative study to understand the context and compare a developed and developing country to identify differences.

4 | FINDINGS

The distribution of SDGs-oriented PSI types in Thailand and South Korea is shown in Table 4. Overall, the results indicate that *the innovation locus* in both countries is more external than internal, with Korea at around 62%, which is slightly higher than Thailand which is almost 60%. These figures are in contrast to Chen et al.'s (2020) findings from the United States, in which the locus was more internal (63%). For *the innovation focus*, Thailand has almost the same proportions in three categories at around 33%, while Korea is predominately focused towards the strategy category (44.7%). These results differ from the US cases in which the capacity category (50%) is primarily in innovation focus (Chen et al., 2020). In addition, the policy innovation type is the majority of initiatives for both countries. However, mission innovation has the lowest percentage in Thailand, while partner innovation represents the fewest number of cases in Korea, whereas in US cases, management innovation (32%) is the highest proportion (Chen et al., 2020).

A closer examination of each innovation type with an *internal focus* reveals that mission innovation is the least reported type of innovation in Thailand (6.5%), with those figures slightly lower than that in Korea (8.5%). The Industrial Estate Authority of Thailand, for example, is the first organisation in Thailand to apply the idea of an Eco-Industrial Town to industrial constructed estates to transform all of its 34 operational industrial estates into Eco-industrial towns by 2021, whereas the Seoul Metropolitan Government was the first local government in Korea to implement a gender-equal pay disclosure system, with plans to spread it across the public and private sectors in order to reduce the pay gap.

Management innovation contrasts between Thai and Korean contexts, where Thailand (18.9%) surpasses Korea (12.8%) slightly, which is approximately half the number reported in the United States (32%) (Chen et al., 2020). Cases from Thailand demonstrated management innovation by implementing new management practices such as modifying technologies at all service points to streamline workflow; integrating data from different agencies; and adopting new information technology (such as Big Data and AI) to monitor and anticipate health statuses, social welfare, and water management. In Korea, the implementation of 'the Big Data Standard Analysis Model', the formation of 'the Customized and Integrated Tax Delinquency Statistics Management System', and the establishment of 'the Special Judicial Police' are the most notable projects.

The final type of internal focus innovation, service innovation, is slightly more evident in Korea (17%) than in Thailand (14.8%), both of which are less than in the United States (25%) (Chen et al., 2020). In both countries, most of these innovations developed and provided services in the areas of health, agriculture, and social welfare. The cases from Thailand attempted to provide novel services to citizens living in rural areas and examples were Agri-Map, an agricultural zoning service utilising digital geographical information system (GIS), and NU Med, a novel digital platform to reach patients from rural areas. Korean applications reflect the urbanisation in the country and

introduced services for citizens in large cities such as Happy Mom's Centre and cooling centres to mitigate the risks caused by heatwaves.

Concerning *external focus*, policy innovation is the most frequently reported innovation type for both countries, with Korea (36.2%) having a higher percentage than Thailand (26.6%). These figures are approximately three times and twice as high as the United States (12%), respectively (Chen et al., 2020). Coded policy innovations in Korea introduced a variety of policies, including increasing the birth rate (e.g. Seocho Grandparents Childcare Support Program), promoting and improving the social welfare system to aid the poor, the elderly, children, and women (e.g. Seoul Welfare Governance), environmental protection and sustainable management energy (e.g. Solar City), as well as promoting gender equality (e.g. Let's Make Seodaemun into a Female-Friendly City). Apart from social welfare and environmental preservation, Thailand's policy innovations involve legislation to reduce the number of road traffic accidents (e.g. Thailand Road Safety Improvement Effort with Nationwide GPS Tracking System Initiative) and deal with waste management (e.g. 1-2-0 Public Participation Model for Waste Management) and forest encroachment (e.g. Project of Forest Rehabilitation and Forest Occupation Development).

Partner innovation is the least common type of externally oriented innovation type in Korea (7.4%), accounting for less than half the number of such innovations of Thailand (16%) and the United States (18%) (Chen et al., 2020). The Korean government has established external relationships and networks with partner organisations such as other government organisations, local governments, universities, financial institutions, and a variety of private enterprises from different industries. For example, Public Meal Program is a public–private collaboration, which ensures the provision of safe food for everyone in Seoul and established new partnerships with small- and medium-sized family farms. In the same way, government organisations in Thailand also collaborated with the public and private sectors at various levels. For instance, the Ministry of Public Health aimed to prevent the spread of the disease, Middle East Respiratory Syndrome (MERS-CoV), to the general public and to put an end to the epidemic as soon as feasible. New partnerships were established with public and private organisations as well as with NGOs including The Thai Royal Police, Bangkok Metropolitan Authority, Airports of Thailand, immigration police, mosques, embassies, hospitals, CCTV installation agencies, and taxi driver cooperatives all worked together to successfully stop the MERS-CoV virus epidemic.

Finally, in both South Korea and Thailand, government organisations reported a similar proportion of citizen innovation at around 18%. This result is around 2.5 times higher than the amount of citizen innovation in the United States (Chen et al., 2020). The majority of citizen innovations submitted by Korean government agencies aimed to introduce new digital platforms to facilitate citizens to provide feedback and opinion such as the Seoul mobile voting system—mVoting by Seoul Metropolitan Government, and the Safety e-Report by the Ministry of the Interior and Safety. In the meantime, in Thailand, we coded many initiatives where citizens participated more actively in the process of collective thinking, planning, decision-making, and implementation. The Smart Community Social Watch and Prevention initiative by Sakaeo Shelter for Children and Families and the Geographic Information System for Area Management initiative by Maesuk Sub-district Administrative Organization were examples of such co-creation activities.

5 | DISCUSSION

In this section, we discuss our findings considering the contextual characteristics of the two countries. Our coding revealed that the innovation locus is more external than internal. This result

can be explained by the administrative contexts where the governance paradigm shifts towards post-NPM reform in both countries. This emphasises a holistic approach to governance with interrelated goals by focusing on both vertical and horizontal collaboration between government organisations and other agencies (Jun, 2015; Panyasiri, 2020) as well as with citizens to enhance the effectiveness of public services in addressing complex social problems. Thus, to *authorise* SDGs, to *develop capacity* for SDGs, and to *operationalise* SDGs in public service delivery within the public service, cases submitted demonstrate greater external orientation.

The findings on the external orientation are also related to broader public reform attempts that have external orientation as well as show the importance of administrative and political contexts in both countries. For instance, Thailand implements Government 4.0 and E-government 4.0, which are in line with the 20-year National Strategy (2018–2037) that attempts to reform the government with a strong emphasis on Citizen-Centric Services, which aims to deliver services in accordance with needs of each citizen. On one hand, these reforms define externally oriented public administration via concepts of open, connected, citizen-centric, smart, and government. On the other hand, they aim to integrate information, processes, and public service delivery as well as utilise ICT and related technologies, through Big Data and the IoT, to assist public employees in their work (Huque & Jongruck, 2020; Sagarik et al., 2018) for capacity development and better operations. Similarly, the Government 3.0 initiative of the Korean government aimed to structure a non-linear, non-hierarchical, and multi-channel ecology that is accessible everywhere and at any time based on citizens' requirements, uses, and satisfaction on a personal level. This reform encourages citizen participation and collaboration by encouraging sharing of information and interconnections among citizens, businesses, and government agencies. Therefore, citizen innovation in both countries is significant within the external locus.

Our finding that policy innovation with an external orientation and strategy focus forms the most common type in both countries reflects the dominant role of the state and the path-dependent, top-down policymaking in their administrative context (Choi et al., 2013; Varanyuwatana & Laovakul, 2010). This finding in Thailand can also be explained considering the majority of the cases submitted by the central governments and Thailand's administration was more strongly centralised than Korea as decision-making is still primarily confined to the central level despite the attempts of decentralisation (Unger & Mahakanjana, 2016; Varanyuwatana & Laovakul, 2010). Furthermore, the majority of policy innovations in both countries are also influenced by the social context because the identity of the SDGs represents both direct and indirect social needs, such as 'no poverty' and 'good health and well-being' as well as 'climate action', 'life below water', and 'life on land' (Eichler & Schwarz, 2019), and the policy innovation is a type of innovation that offers new benefits and functions to stakeholders in order to address social problems (Chen et al., 2020). Hence, both governments utilised policy innovation to deal with social issues, for instance, the Korean government implemented policies to increase the birth rate, improve social welfare, and promote gender equality, whereas Thailand developed policies to control garbage and prevent forest encroachment.

The findings on the external orientation contrast with Chen et al.'s (2020) preliminary findings, where the internal locus and management innovation were more frequent. This difference can be attributed to the time periods studied, thus emphasizing the temporal context. Chen et al. (2020) studied the applications to the Innovation in American Government Awards Program in 2010, whilst our study includes applications between 2018 and 2021 when the models based on external orientation such as post-NPM, co-creation, and collaborative PSI became popular among the policy and scholarly circles.

Considering the focus of the innovations, our finding that strategy focus was reported as the most common foci in Korean applications can be related to Chen et al.'s (2020) argument that there is a temporality between strategy, capacity, and operations. Korean applications first preferred to have SDGs authorised through innovations, which have a strategy focus and prioritise less capacity focus. This corresponds with the administrative, political, and technological context as Korea has developed government efficiency ahead (government effectiveness ranking of 34 in 2017) and high efficiency in ICTs (ICTs ranking of 2 in 2017) (Global Innovation Index 2017). In addition, the Korean government announced Government 3.0 in 2013, earlier than the Thai government. In doing so, they intended to provide low-cost but high-quality services tailored for citizens, use ICT to improve administrative efficiency and transparency, as well as personalise all government services based on each individual's circumstances and preferences (Nam, 2020). Korean PSOs with greater organisational capacity compared to Thai PSOs focused more on strategy and operational aspects to authorise SDGs among the communities and operationalise SDGs in public service delivery.

However, considering Thailand's administrative and technological context, Thai PSOs have a relative capacity gap (government effectiveness and ICTs ranking of 50 and 71 in 2017, respectively) to fill via innovations. Hence, we argue, Thai PSOs adopted a pragmatic approach to introducing innovations with a capacity focus rather than introducing strategy focus, aiming to exploit SDGs (such as SDG:3) to develop capacity to solve path-dependent problems such as uneven distribution of healthcare services. This context difference can also explain that service innovation with operation focus constitutes the majority of the internal locus for Korea, whereas management innovation is less prevalent in Korea than in Thailand.

6 | CONCLUSIONS

The aim of this study was to provide a greater understanding of the SDG-oriented PSI in the two specific contexts. In order to accomplish this, utilising a recent PSI typology proposed by Chen et al. (2020), which reflects the characteristics of PSOs and reduces overlap and relationship across classifications, we comparatively studied 263 UNPSA-published SDGs-oriented innovations from Thailand and Korea submitted between 2018 and 2021.

Our study provides three main contributions to the current PSI literature. First, our findings respond to Chen et al.'s (2020) call to investigate their framework in the Asian context. Our analysis shows the typology is robust to classify innovation activity for SDGs. In addition, these findings provide novel evidence for the literature to understand how SDG-oriented PSI is introduced (Mariani et al, 2022; Raffer et al., 2022). Our findings in Korea support Chen et al.'s (2020) argument that there is a temporal relationship between three foci (strategy, capacity, and operation) and South Korean cases prioritised strategy to introduce SDGs concepts in organisational missions and policy agendas for the society.

Second, our study provides empirical evidence in a comparative study of the role of the national context on PSI in the two Asian countries, responding to the further research agendas of Demircioglu (2020) and Cinar et al. (2022b) for cross-country comparative studies. The results indicated that the administrative and technological contexts play a role in the configuration of innovation types. Whilst SDGs-oriented PSI in Korea prioritised strategy above capacity and operation focus, those in Thailand place greater emphasis on capacity focus to fill the government's capacity that has lagged behind Korea significantly. Thus, we argue that administrative contexts with low-level capabilities prioritise innovation types with a capacity focus (management or partner

innovation). This also supports Cinar et al.'s (2022b) argument that Turkish PSOs introduced significantly higher number of process innovation compared to Japan. Furthermore, social context influences the SDG-oriented PSI, especially on the policy innovation employed to tackle social problems, which is an essential objective of the SDGs (Eichler & Schwarz, 2019; Peutz et al., 2020).

Third, our study in SDGs-oriented PSI provides a greater understanding of the distribution of innovation activities in the public sector in both developed and developing countries. This analysis enables practitioners and policymakers to comprehend different dimensions of PSI and how to establish their innovation portfolios that reflect specific contexts to achieve SDGs. To implement the SDGs, PSOs should consider the relationship between the innovation locus (external and internal) and innovation focus (strategy, capacity, and operation). Considering the innovation locus, PSOs should focus on external orientation in an administrative context where the governance paradigm shifts towards post-NPM reform; however, they should be supported by innovations with internal locus as well, in accordance with the portfolio approach. Regarding the innovation focus, PSOs could employ innovation that is capacity focused to enhance the potential of the government when their objective is to strengthen their administrative capacity, similar to Thailand. In contrast, countries that have administrative capacity, such as Korea, could concentrate more on strategy or operation focus.

Whilst this study provides several important contributions to the literature, it also has some limitations. Firstly, this study used data from UNPSA. Awards studies have been criticised since they only concentrate on successful innovations and the novelty could be overclaimed (Arundel & Huber, 2013). However, the objective of this study was to compare two countries rather than successful and unsuccessful innovations. Moreover, there are robust evaluation rounds for UNPSA applications, which hinders the overclaim of novelty. Secondly, although data from award applications (e.g. Chen et al., 2020; Wu et al., 2013) and particularly from UNPSA (e.g. Cinar et al., 2021, 2022b, 2023) have been widely used in previous research, there are limitations in the representativeness of the cases. However, the composition of the cases analysed can reflect the composition of the central–local government in each country which can address the representativeness critique. Hence, our results should be regarded as context specific. Despite these limitations, our findings provide first comparative empirical evidence to shed light on the landscape of SDGs-oriented PSI.

Considering these limitations, we propose a number of items for the future research agenda. Future adoption studies based on the new typology can test adoption as a dependent variable and investigate the influence of organisational and environmental variables. Similarly, longitudinal studies should also evaluate the temporality argument for innovation focus to understand how organisations and national governments introduce and implement SDGs. In addition, since our findings are context specific, further evidence is needed to generalise them in other contexts—particularly, comparative studies in developed and developing countries should study how PSI is associated with SDGs.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data are available at https://publicadministration.un.org/unpsa/database/UNPSA-Initiatives-and-the-SDGs.

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NOTE

[1]Please see the coding book and coding protocol: https://www.tandfonline.com/doi/suppl/10.1080/14719037.2019.1645874/suppl_file/rpxm_a_1645874_sm3396.pdf.

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APPENDIX

TABLE A1 Types of innovations coded and quotes for evidence.

	Thailand	Korea
Mission innovation	Innovation title: Industry-Community Partnership driving to Sustainable Eco-Industrial Town '*Therefore, I-EA-T's goal is to develop all 34 operated industrial estates into the Eco-industrial town within 2021, also to create community economy which gets along with industrial economy to become one industrial estate, one community enterprise*'.	Innovation title: Reaching Out Community Service Center '*This initiative is innovative since it transformed the function of community service centres from places where civil complaints are processed to communal spaces focusing on the people and their welfare, establishing a foundation for the provision of universal rather than selective welfare*'.
Policy innovation	Innovation title: Self-reliant Solar Energy Community '*The objectives of the project were to provide people the electricity with low-cost solar energy as soon as possible, people able to handle household electricity by themselves, suitability for context of areas where electricity expansion was impossible, and suitability for the area with solar radiation intensity throughout the year*'.	Innovation title: A City Where People and Animals Coexist, Animal Welfare Initiative '*Gangdong District set the prevention-oriented animal welfare policy as its basic orientation. The district is in compliance with the European Commission's five animal welfare principles in 1997 and is carrying out various policies to improve people's awareness of animal welfare, for example, education programs on respect for life and animal love campaigns*'.
Management innovation	Innovation title: Go Together with Public Social Welfare Cards Payment '*The government decided to integrate public social welfare database. It provides the government in-depth information about low-income earners to assist policy planning on helping low-income people with extensive and appropriate public social welfare. It also provides evaluation records on different types of public social welfare allocation which can be analysed to improve public social welfare allocation for proper target groups*'.	Innovation title: Establish and run Welfare-visiting map system '*Welfare-visiting map, established by Seodaemun-gu, a first for a local government, is a real-time computerised management system meant to systematically manage the discovery, support, and management of welfare blind spots. This helped local governments to select the most efficient visiting route broadening the limitations of manpower, and systematised welfare services that can be supported to provide them*'.

(Continues)

TABLE A1 (Continued)

	Thailand	Korea
Partner innovation	Innovation title: The Sky Doctor Project in Tak Province '*National Institute for Emergency Medicine (NIEM), in collaboration with Royal Thai Armed Forces, Royal Thai Police, Ministry of Agriculture and Cooperatives, and Thai private sector, has initiated an aeromedical transport system in 2009. The project's objective is to enable patients residing in remote, mountainous areas, some of which are not reachable by a road transport but primarily a water transport, to efficiently access emergency medical care at public health facilities*'.	Innovation title: Seoul's Energy Welfare Public-Private Partnership Program '*Seoul's Energy Welfare Public-Private Partnership Program is a collaboration between local government and the private sector that seeks to reduce energy poverty and promote the conservation and sharing of energy*'.
Service innovation	Innovation title: MEA Smart Life: The Application which answers all questions in electricity '*The MEA has applied digital technology in a process to improve and to offer new service in the form of "MEA Smart Life Application", that focuses on easy, convenient, fast and modern solutions. Customers can access various services "Any Where, Any Time, Any Device"*'.	Innovation title: Document24 '*Document 24 is an e-government service that allows the general public to submit official documents to government offices for administrative purposes from home or workplace via the Internet*'.
Citizen innovation	Innovation title: Project of Forest Rehabilitation and Forest Occupation Development, Dong Man Community Forest Network '*The Royal Forest Department (RFD) introduced the idea of planting forests in the heart of people which later came into practice to encourage people and the forest to live together with the goals of forest rehabilitation, …… The project promotes participatory formal administration in the area by allowing the local people to involve the process of collaborative thinking, planning, decision-making, implementation, and evaluation. The process influences the people in the community to realise the importance of problem solving, conflict resolution, and collaboration with government agencies*'.	Innovation title: Mobile voting system 'mVoting' '*Seoul City introduced the mobile voting service with the aim of ensuring that the opinions of citizens from all walks of life are heard in the policymaking process. Seoul City uses mVoting to hear citizens' opinions on a wide array of matters, from serious policymaking and policy implementation to simple preference surveys*'.