

Dynamic Capabilities and Sustained Competitive Advantage in Indonesian Public Sector Innovation: The Moderating Role of Effectuation

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ABSTRACT

Purpose – This study examines how dynamic capabilities influence sustainable competitive advantage (SCA) in Indonesian public sector organizations and investigates the moderating role of effectuation. Drawing on the Dynamic Capabilities View (DCV), Resource-Based View (RBV), and effectuation logic, the study explains how sensing, seizing, and transforming capabilities sustain public sector innovation.

Design/Methodology/Approach – A quantitative explanatory survey was conducted using data from 290 public service innovations selected from 1,059 KIPP Top Public Service Innovation (SINOVIK) recipients. Data were collected through structured questionnaires and analyzed using Structural Equation Modeling–Partial Least Squares (SEM-PLS).

Findings – The results show that sensing, seizing, and transforming capabilities have positive and significant effects on SCA. Effectuation significantly strengthens these relationships, indicating that adaptive decision-making, experimentation, stakeholder commitment, and flexible resource utilization enhance the sustainability of public sector innovation.

Originality/Value – This study extends the literature by integrating dynamic capabilities and effectuation to explain sustainable competitive advantage in the public sector. The findings suggest that innovation sustainability depends not only on organizational capabilities but also on adaptive decision-making, providing practical guidance for strengthening long-term public value and institutionalized service innovation.

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1. Introduction

Public sector organizations are increasingly required to operate in an environment distinguished by technological acceleration, social complexity, fiscal pressure, and stronger public demand for accountable and responsive services. These pressures have shifted the role of government from merely administering regulations to continuously improving public value throughout innovation. In this context, public sector innovation is no longer a peripheral managerial activity, but a strategic requirement for improving service quality, strengthening public trust, increasing organizational responsiveness, and enabling government institutions to remain relevant amid changing citizen needs (Bekkers et al., 2011; Criado et al., 2023; De Vries et al., 2016; Mazzarol & Reboud, 2020; OECD, 2016; Pradana et al., 2022).

Indonesia gives a relevant empirical setting for examining this issue. The government has encouraged public sector innovation through several regulatory and institutional instruments, including Law No. 25 of 2009 regarding Public Services, Law No. 5 of 2014 regarding the State Civil Apparatus, Law No. 23 of 2014 concerning Regional Government, and Government Regulation No. 38 of 2017 regarding Regional Innovation. At the policy level, the Ministry of Administrative and Bureaucratic Reform (KemenPAN-RB) has also promoted innovation throughout the Kompetisi Inovasi Pelayanan Publik (KIPP) or Public Service Innovation Competition, since 2014. By 2024, 26,039 innovations had been listed in the KIPP, and 1,059 public sector innovations had obtained the Top Innovation predicate (Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi, 2025). This achievement indicates that Indonesia has built a substantial innovation portfolio in the public sector.

However, the high number of innovations does not automatically indicate that those innovations are sustained. The main problem lies not only in how public organizations create or adopt innovation, but in how they maintain, institutionalize, adapt, and replicate it over time. The suspension of KIPP in 2024 for evaluation through the Monitoring of Sustainability and Replication of Public Service Innovation program, or Pemantauan Keberlanjutan dan Replikasi Inovasi Pelayanan Publik (PKRI), reflects the strategic importance of innovation sustainability. The 2024 PKRI process identified only 58 innovations in the sustainability group and 36 innovations in the replication group that were eligible for presentation and interview assessment (Hakim, 2024). This condition shows a gap between the quantity of innovation produced and the capacity of public organizations to sustain innovation as an institutionalized public service practice.

The problem of innovation sustainability is also supported by prior studies. Borins (2000) found that approximately 10 percent of award-winning innovations were eventually discontinued. Van der Panne et al. (2003) noted that only 20 percent of innovations survived, while Pollitt et al. (2007) reported that 68 percent of award-winning innovations could no longer be traced after more than two years. Glor (2015) also found that 22 percent of innovations were discontinued. These findings indicate that sustainability is a critical stage in the innovation process. Public sector innovation should not stop at the initial adoption or implementation stage; it must be embedded into organizational routines, standard operating procedures, resource allocation mechanisms, accountability systems, and learning processes (Greenhalgh et al., 2004; Thøgersen et al., 2021; Van Acker & Bouckaert, 2018; Widodo et al., 2022; Wisdom et al., 2014).

This study discusses that the sustainability problem of public sector innovation can be examined through the lens of sustainable competitive advantage (SCA). Although SCA was originally advanced in the private sector, the concept is relevant to public organizations when

advantage is interpreted not as market domination, but as the capability of an organization to consistently create, maintain, and distribute superior public value. Kay (1993) explains that SCA is built through distinctive capabilities, particularly architecture, reputation, and innovation. Architecture in the public sector refers to the quality of internal and external relationships among public organizations, citizens, and stakeholders. Reputation reflects public trust and institutional legitimacy. Innovation indicates to the organization's capability to renew services, processes, and solutions continuously. These three pillars are consistent with the requirement that public sector innovation must be institutionalized, trusted, adaptive, and able of generating long-term public value.

Theoretically, SCA is rooted in the Resource-Based View, which states that organizational resources and capabilities can create advantage when they are valuable, rare, imperfectly imitable, and non-substitutable (Barney, 1991). Nevertheless, resources alone in a dynamic environment are insufficient. Organizations need dynamic capabilities to sense changes, seize opportunities, and transform or reconfigure resources in response to environmental shifts (Teece et al., 1997; Teece, 2007). In the public sector, sensing capability ables organizations to recognize transformations in citizen needs, policy direction, technological opportunities, and stakeholder expectations. Seizing capability ables organizations to organize resources, design service responses, and execute innovation opportunities. Transforming capability enables organizations to reconfigure routines, structures, procedures, and resource arrangements so that innovation becomes part of daily organizational practice.

Several studies have shown that dynamic capabilities can improve innovation performance, organizational performance, and competitive advantage (Kump et al., 2018; Panagiotopoulos et al., 2023; Wong & Ngai, 2023; Zhou et al., 2019). Nevertheless, the correlation between dynamic capabilities and performance remains inconsistent. Some studies show positive and significant effects, while others find weak or insignificant effects under certain conditions (Biswakarma & Bohora, 2025; Heaton et al., 2023; Kähkönen et al., 2025; Mwanza & Ahmad Dar, 2025). In public organizations, dynamic capabilities may be constrained by rigid rules, limited budget flexibility, hierarchical decision-making, and political-administrative complexity. Therefore, dynamic capabilities should not be understood merely as organizational potential. They require an activating logic that can translate sensing, seizing, and transforming into sustained public value.

Effectuation logic offers such an activating mechanism. Sarasvathy (2001) explains that effectuation is a decision-making logic used under uncertainty, emphasizing available means, affordable loss, flexibility, experimentation, and stakeholder pre-commitment. This logic differs from predictive planning because it focuses on what can be controlled rather than what must be predicted. In public sector innovation, effectuation can help organizations conduct small-scale experiments, mobilize existing resources, build early stakeholder commitment, share risk, and adapt solutions as new information emerges. Thus, effectuation is relevant for public organizations that must innovate under bureaucratic constraints, uncertain policy environments, and limited resources (Chandler et al., 2011; Mäensivu et al., 2016; Mero & Haapio, 2022).

This study positions effectuation as a moderating variable in the correlation between SCA and dynamic capabilities. The argument is that dynamic capabilities will have a stronger influence on SCA when public organizations apply effectuation logic. Sensing capability becomes more useful when organizations do not wait for perfect information, but use available data, citizen feedback, and early stakeholder engagement to identify real service problems. Seizing

capability becomes stronger when organizations implement affordable experiments and flexible service designs before scaling up innovation. Transforming capability becomes more sustainable when early commitments, shared ownership, and controlled adaptation help embed innovation into standard procedures, governance mechanisms, and resource allocation systems.

Derived from this theoretical and empirical gap, this research tends to examine the influence of dynamic capabilities on SCA in Indonesian public sector organizations participating in KIPP and obtaining the Top 99 public innovation predicate. Specifically, this study examines the impacts of the capability of sensing, seizing, and transforming on SCA. This study also analyzes whether effectuation logic strengthens the relationship between each dimension of DCV and SCA.

This study uses a quantitative explanatory design. Data are gathered through a structured questionnaire distributed to one knowledgeable representative from each sampled innovation-originating organization. The respondents are expected to represent public organizations that have direct knowledge of innovation processes, organizational capabilities, and the sustainability of public service innovation. The empirical model is examined employing Structural Equation Modeling Partial Least Squares (SEM-PLS) to test both the direct impacts of DCV dimensions and the moderating effects of effectuation logic.

This research provides to the literature in 3 ways. First, it expands the concept of SCA from a private-sector competitive logic to a public-sector public-value logic by emphasizing architecture, reputation, and innovation as strategic outcomes of sustained public sector innovation. Second, it enriches the Dynamic Capabilities View (DCV) by explaining that sensing, seizing, and transforming capabilities require an entrepreneurial decision-making logic to become more effective in bureaucratic and uncertain environments. Third, it introduces effectuation as a moderating mechanism that explains why some public organizations are better capable to convert dynamic capabilities into sustained innovation results. Practically, this study offers a strategic framework for public managers to maintain innovation beyond pilot projects by strengthening adaptive sensing, resource mobilization, institutional reconfiguration, and effectual decision-making.

2. Literature Review & Hypothesis Development

2.1 Resource-Based View, Dynamic Capabilities, and Sustainable Competitive Advantage in the Public Sector

The Resource-Based View (RBV) explains that SCA emerges from organizational resources and capabilities that are valuable, rare, imperfectly imitable, and non-substitutable (Barney, 1991). Although RBV was initially developed to explain firm-level advantage in competitive markets, its logic remains relevant for public sector organizations when advantage is interpreted as the capability to create, maintain, and distribute superior public value. In the public sector, strategic resources may include bureaucratic expertise, institutional knowledge, digital service infrastructure, inter-agency coordination routines, and public trust. These resources become strategically meaningful when they are embedded in organizational processes and continuously used to improve public services.

However, RBV alone is insufficient to explain how public organizations sustain innovation under changing social, technological, fiscal, and regulatory conditions. DCV extends RBV by emphasizing the organization's ability to renew, reconfigure, and redeploy resources in response to environmental change (Teece et al., 1997; Teece, 2007). Teece (2007) categorizes

dynamic capabilities into three main dimensions: sensing, seizing, and transforming. Sensing capability cites to the capability to discover threats, opportunities, technological changes, citizen needs, and policy signals. Seizing capability refers to the ability to mobilize resources and make strategic decisions to capture identified opportunities. Transforming capability refers to the competence to reconfigure structures, processes, routines, and resources to maintain organizational relevance over time.

SCA, as conceptualized by Kay (1993), provides the strategic outcome of this capability-based logic. Kay argues that enduring advantage is built through distinctive capabilities, especially relational architecture, reputation, and innovation. Relational architecture in the public sector able to be understood as the quality of collaboration among government units, citizens, communities, and external partners. Reputation refers to public trust, institutional legitimacy, and perceived service reliability. Innovation cites to the organization's competence to renew services, processes, and solutions continuously. Thus, SCA in the public sector does not imply market superiority over competitors, but rather the capacity of public organizations to sustain public value through trusted, collaborative, and continuously renewed innovation.

This theoretical integration is important because public sector innovation often fails not at the stage of idea creation, but at the stage of institutionalization and sustainability. Innovation must be transformed from temporary projects into organizational routines, standard operating procedures, resource allocation mechanisms, and accountability systems. Therefore, this study conceptualizes SCA as a strategic condition in which public sector innovation becomes persistent, difficult to imitate, embedded in organizational capabilities, and capable of generating continuous public value.

2.2 Dynamic Capabilities and Sustainable Competitive Advantage

Dynamic capabilities serve as the mechanism through which public organizations transform strategic resources into sustained innovation outcomes. Prior studies show that dynamic capabilities are associated with innovation performance, organizational performance, digital transformation, and public value creation (Kump et al., 2019; Panagiotopoulos et al., 2023; Zhou et al., 2019). Nevertheless, empirical discoveries remain inconsistent. Some studies report positive and significant effects of dynamic capabilities on performance, while others show insignificant or conditional effects, particularly when organizational flexibility, governance autonomy, or resilience is absent (Heaton et al., 2023; Biswakarma & Bohora, 2025; Kähkönen et al., 2025; Mwanza & Ahmad Dar, 2025). This inconsistency indicates that each dimension of dynamic capabilities should be examined separately, especially in public organizations that operate under bureaucratic constraints and public accountability pressures.

2.2.1 Sensing Capability and Sustainable Competitive Advantage

Sensing capability is the organization's competence to detect changes, discover opportunities, understand citizen needs, monitor policy shifts, and acquire relevant knowledge from the environment. In public sector innovation, sensing capability enables organizations to recognize service gaps, anticipate social demands, and discover best practices that can be adjusted to their institutional context. This capability is critical because public service innovation must remain aligned with changing public needs, regulatory priorities, and technological developments.

Sensing capability contributes to SCA through three mechanisms. First, it strengthens relational architecture because systematic environmental scanning helps public organizations map relevant actors, understand stakeholder expectations, and build information-sharing mechanisms across units and partners. Second, it strengthens reputation because

organizations that detect citizen needs earlier can design more responsive and reliable services. Third, it supports repeated innovation because systematic feedback, benchmarking, and data-based learning allow organizations to continuously renew public services.

Empirical studies support this reasoning. Kump et al. (2019) validated sensing as one of the core dimensions of dynamic capabilities and showed its relevance for business and innovation performance. Panagiotopoulos et al. (2023) found that dynamic capabilities in local government improve efficiency and effectiveness, particularly through learning and coordination processes. Zhou et al. (2019) also showed that dynamic capabilities encourage innovation, which subsequently improves organizational performance. In the public sector, sensing capability is therefore expected to strengthen public organizations' ability to maintain sustained advantage through adaptive learning, credible service responses, and continuous innovation.

H1: Sensing capability has a positive impact on SCA.

2.2.2 Seizing Capability and Sustainable Competitive Advantage

Seizing capability cites to the organization's competence to organize resources, build strategic decisions, design service solutions, and applicate opportunities that have been discovered throughout sensing processes. In public organizations, seizing capability is reflected in the ability to translate knowledge into concrete service improvements, allocate budget and human resources, design collaborative programs, and select innovation initiatives that have clear public value.

Seizing capability supports SCA because it converts environmental awareness into organizational action. It strengthens relational architecture by formalizing cooperation, developing shared work procedures, and mobilizing partners around public service innovation. It strengthens reputation by improving service consistency, accountability, and reliability. It also strengthens innovation because resource commitment and decision-making capacity allow ideas to move beyond discussion into implementation.

Prior research provides support for this relationship. Panagiotopoulos et al. (2023) showed that dynamic capabilities contribute to public sector performance through the use of operational information and communication technology capabilities. Kähkönen et al. (2025) found that seizing capability plays an important role in innovative public procurement by influencing supplier market impact and procurement participation in innovation. Kump et al. (2019) also showed that the seizing dimension is relevant for innovation outcomes and organizational performance. These findings suggest that public organizations with stronger seizing capability are better qualified of transforming opportunities into sustained service improvements.

H2: Seizing capability has a positive impact on SCA.

2.2.3 Transforming Capability and Sustainable Competitive Advantage

Transforming capability is the organization's competence to reconfigure resources, redesign processes, restructure roles, integrate new routines, and maintain organizational alignment amid environmental change. This capability in the public sector is central to innovation sustainability because innovations often fail when they remain dependent on individual champions, temporary projects, or short-term policy attention. Transforming capability helps organizations embed innovation into standard procedures, institutional routines, budgeting mechanisms, and cross-unit coordination systems.

Transforming capability contributes to SCA by making innovation more durable and less dependent on temporary conditions. It strengthens relational architecture by stabilizing

collaboration through formal structures, shared procedures, and repeated coordination. It strengthens reputation because service reliability increases when innovation is embedded in organizational systems rather than personal initiatives. It also supports continuous innovation because organizations can modify outdated procedures, adapt digital systems, and replicate successful innovation across units.

Empirical evidence assists this argument. Kähkönen et al. (2025) found that transforming capability contributes to innovation participation in public procurement and supports collaborative innovation outcomes. Hall (2025) showed that transforming capability is a strong predictor of organizational performance in a dynamic service context. Heaton et al. (2023) also emphasized that resource reallocation and governance flexibility are important for improving organizational outcomes in public and nonprofit contexts. These studies indicate that transforming capability is essential for converting innovation into institutionalized and sustainable organizational advantage.

H3: Transforming capability has a positive impact on SCA.

2.3 Effectuation as a Moderating Mechanism

Effectuation is a decision-making logic under uncertainty that emphasizes available means, affordable loss, stakeholder pre-commitment, flexibility, experimentation, and control over predictable planning (Sarasvathy, 2001; Chandler et al., 2011). Effectuation differs from causation because it does not begin with fixed goals and predictive planning. Instead, it begins with available resources, stakeholder relationships, and iterative experimentation. This logic is highly relevant for public sector innovation since public organizations often operate under uncertainty, limited fiscal flexibility, complex stakeholder expectations, and changing political-administrative priorities.

Effectuation can strengthen the correlation between dynamic capabilities and SCA because it functions as an activation mechanism. Dynamic capabilities explain what organizations are able to do: sense, seize, and transform. Effectuation explains how organizations act under uncertainty: by experimenting, limiting risk, mobilizing early commitments, using available resources, and adapting to contingencies. Therefore, effectuation can help public organizations translate capability potential into sustained public value.

For sensing capability, effectuation strengthens the conversion of environmental scanning into SCA by encouraging organizations to use existing data, citizen feedback, front-line knowledge, and stakeholder networks without waiting for perfect information. This makes sensing more practical, faster, and closer to real service problems. Under strong effectuation logic, sensing capability is more likely to produce credible service responses, early stakeholder alignment, and stronger public trust.

For seizing capability, effectuation strengthens the conversion of opportunity capture into SCA by encouraging affordable experiments, small-scale pilots, flexible decision-making, and early stakeholder commitment. These mechanisms reduce the risk of large-scale failure and increase the probability that public organizations can mobilize resources around innovations that are feasible and publicly valuable. As a result, seizing capability becomes more effective in building relational architecture, reputation, and repeated innovation.

For transforming capability, effectuation strengthens the conversion of reconfiguration into SCA by supporting adaptive institutionalization. Through stakeholder pre-commitment, flexible adjustment, and controlled experimentation, public organizations can more easily embed innovations into standard operating procedures, governance systems, and resource

allocation mechanisms. This enables innovation to survive leadership changes, policy shifts, and administrative constraints.

Prior studies support this moderating logic. Mero and Haapio (2022) show that organizations facing unexpected uncertainty often execute sensing, seizing, and transforming through effectual practices such as rapid iteration, co-creation, front-line empowerment, and organic reconfiguration. Mäensivu et al. (2016) demonstrate that in public organizations, small-scale initiatives can become institutional practices when supported by sense-making and sense-giving across organizational levels. Yuniarty et al. (2021) also found that effectuation strengthens the influence of internal capabilities on innovation performance. Thus, effectuation is expected to strengthen the effect of each DCV dimension on SCA.

H4a: Effectuation strengthens the positive impact of sensing capability on SCA.

H4b: Effectuation strengthens the positive impact of seizing capability on SCA.

H4c: Effectuation strengthens the positive impact of transforming capability on SCA.

2.4 Conceptual Framework

Derived from the preceding theoretical arguments, this research suggests that SCA in public sector innovation is influenced by three dimensions of dynamic capabilities: sensing, seizing, and transforming. Sensing capability enables public organizations to identify relevant public needs and environmental changes. Seizing capability allows organizations to organize resources and applicate innovation opportunities. Transforming capability enables organizations to institutionalize innovation through reconfiguration of routines, structures, and resources. Furthermore, effectuation is placed as a moderating variable that strengthens the correlation between each DCV dimension and SCA. The conceptual model therefore explains that public sector innovation sustainability relies not only on organizational capabilities, but also on the decision-making logic that activates those capabilities under uncertainty.

3. Methodology

3.1 Research Design

Following the hypotheses developed in the previous section, this research uses a quantitative explanatory study design to scrutinize the impact of DCV capabilities on SCA and the moderating role of effectuation in Indonesian public sector organizations. A quantitative approach is appropriate since the research tends to assest theoretically based hypotheses using numerical data collected throughout a structured survey. The study applies a deductive logic in which prior theories, particularly the RBV, DCA, SCA, and effectuation logic, are used to construct the conceptual model and guide empirical testing.

This study is also causal in nature because it examines the impact of the capability sensing, seizing, and transforming on SCA. In addition, this study tests whether effectuation strengthens the correlation between each dimension of DCV and SCA. Therefore, the research design is suitable for explaining both direct effects and moderating effects among latent variables.

3.2 Research Context, Population, and Unit of Analysis

The study context is Indonesian public sector organizations that initiated public service innovations in the KIPP, organized by the KemenPAN-RB of the Republic of Indonesia. KIPP was selected because it represents one of the main national instruments for recognizing and promoting public service innovation in Indonesia. The organizations participating in KIPP include ministries, agencies, provincial governments, regencies, and municipalities, thereby

reflecting diverse institutional settings, administrative capacities, and public service challenges.

The population of this research includes of all public service innovations that participated in KIPP and obtained the “Top Public Service Innovation” predicate from 2014 to 2023. Based on these criteria, the total population comprises 1,059 innovations. This population is partitioned into two strata derived from the origin of the innovation-initiating organization: regional government organizations and central government organizations. Regional government organizations include provincial, regency, and municipal governments, while central government organizations include ministries, agencies, and other national-level institutions. The unit of analysis is the public service innovation initiated by a public sector organization. The unit of observation is one knowledgeable representative from each sampled innovation-originating organization. The respondent is expected to have sufficient knowledge of the innovation process, organizational capabilities, decision-making practices, and the sustainability of innovation within the organization.

3.3 Sampling Design

Because the population is large and geographically dispersed, this study uses a sampling approach rather than a census. The sample size is established employing Yamane’s formula because the population size is known. The formula is expressed as follows:

$$n = \frac{N}{1 + N(e)^2}$$

where (n) refers to the required sample size, (N) refers to the population size, and (e) cites to the tolerated sampling error. With (N = 1,059) and (e = 0.05), the minimum sample size is accumulated as follows:

$$n = \frac{1,059}{1 + 1,059(0.05)^2} = 290.35$$

The sample size is rounded to 290 respondents. This sample size is considered adequate for representing the population and for conducting SEM-PLS.

The sampling method used in this research is proportionate stratified random sampling. This method is appropriate because the population is not homogeneous and consists of two organizational strata, namely regional government organizations and central government organizations. Proportional allocation is used to ensure that each stratum is represented according to its share in the population. The proportional allocation formula is as follows:

$$n_i = \frac{N_i}{N} \times n$$

where (n_i) cites to the sample size for stratum (i), (N_i) cites to the population size of stratum (i), (N) cites to the total population, and (n) cites to the total sample size.

Based on the proportional allocation calculation, the regional government stratum consists of 816 innovations and receives 223 samples, while the central government stratum consists of 243 innovations and receives 67 samples. Thus, the final sample distribution is presented as follows.

Table 1. Sample

Origin of Innovation-Initiating Organization	Population	Sample
Regional government organizations	816	223
Central government organizations	243	67
Total	1,059	290

3.4 Data Collection

This research employs both primary and secondary data. Primary data are gathered throughout a structured questionnaire distributed to the selected respondents. The questionnaire is distributed directly and online using Google Forms to improve accessibility, especially because the sampled organizations are located across different regions of Indonesia. The data collection period is planned from January to March 2026.

Secondary data are collected from relevant books, journal articles, official government reports, policy documents, and institutional websites. These data are used to support the development of the theoretical framework, research context, population identification, and interpretation of the empirical findings.

The questionnaire is addressed to knowledgeable representatives from sampled innovation-originating organizations. These respondents may include structural officials or public managers who understand the innovation process, resource mobilization, organizational transformation, and sustainability of public service innovation in their respective institutions. This respondent profile is considered appropriate because the constructs in this study are organizational-level constructs that require informed organizational judgment.

3.5 Measurement

All latent variables are accumulated employing multiple indicators adjusted from prior researches and adapted to the context of Indonesian public sector innovation. The questionnaire uses a 5-point Likert scale ranging from 1 to 5, where 1 presents “strongly disagree” and 5 presents “strongly agree.” The use of a Likert scale is appropriate because the study measures perceptions, attitudes, and organizational assessments related to latent constructs.

Dynamic capabilities are measured through three dimensions: seizing capability, sensing capability, and transforming capability. Sensing capability captures the organization’s ability to identify public service trends, monitor best practices, access relevant information, and detect opportunities for service improvement. Seizing capability captures the organization’s competence to connect external knowledge with internal service contexts, recognize usable information, and transform knowledge into improved processes or services. Transforming capability captures the organization’s ability to implement change, assign responsibility, maintain consistency in planned changes, integrate change initiatives, and maintain daily operations while adapting strategically.

Effectuation is measured as a decision-making logic under uncertainty. The indicators are adapted from the effectuation literature and adjusted to the public sector context. The construct covers experimentation, affordable loss, pre-commitment or partnership, flexibility in responding to contingencies, and orientation toward available means.

SCA is measured as a public-sector strategic outcome reflected in persistent innovation outcomes and distinctive organizational capabilities. This construct in the public sector context captures the organization’s competence to maintain superior and difficult-to-imitate public

service innovation, supported by rare, valuable, inimitable, and non-substitutable resources and capabilities.

3.6 Data Analysis

Data analysis consists of descriptive analysis and inferential analysis. Descriptive analysis is used to summarize respondent characteristics and the responses' distribution for each indicator. This analysis gives an empirical overview of the data before hypothesis testing. Inferential analysis is carried out employing SEM-PLS with SmartPLS 3. SEM-PLS is chosen since it is suitable for analyzing complex models including multiple latent variables, indicators, and moderation impacts. SEM-PLS is also appropriate since it does not need multivariate normality and is widely used in explanatory research that aims to predict and explain variance in endogenous constructs.

The SEM-PLS analysis follows five main stages. First, the structural model is specified derived from the conceptual framework and hypotheses. Second, the measurement model is developed by linking each latent construct to its indicators. Third, the data are screened to identify missing data, inconsistent response patterns, and outliers. Fourth, the PLS algorithm is established to predict construct scores, outer loadings, path coefficients, and explained variance. Fifth, the measurement and structural models are evaluated.

The measurement model is assessed using discriminant validity, convergent validity, and construct reliability. Convergent validity is evaluated using outer loading and Average Variance Extracted (AVE). Indicators are expected to have outer loadings of at least 0.70, although values between 0.60 and 0.70 may still be acceptable in exploratory contexts when they do not reduce the overall quality of the construct. AVE values should exceed 0.50. Discriminant validity is examined employing cross loading and the Fornell–Larcker criterion. Construct reliability is assessed employing composite reliability and Cronbach's alpha, with values of at least 0.70 considered acceptable.

The structural model is evaluated using path coefficients, coefficient of determination (R^2), predictive relevance (Q^2), and bootstrapping results. The R^2 value presents the expansion to which exogenous variables explain the variance of the endogenous variable. The Q^2 value is employed to test the model's predictive relevance, where a value > 0 presents that the model has predictive capability.

The direct-effect model is expressed as follows:

$$SCA = \beta_0 + \beta_1 SEN + \beta_2 SEI + \beta_3 TRA + \varepsilon$$

where SCA represents SCA, SEI represents seizing capability, SEN represents sensing capability, ε represents the error term, and TRA represents transforming capability.

To test the moderating role of effectuation, interaction terms are created between effectuation and each dimension of dynamic capabilities. The moderation model is expressed as follows:

$$SCA = \beta_0 + \beta_1 SEN + \beta_2 SEI + \beta_3 TRA + \beta_4 EFF + \beta_5 (SEN \times EFF) + \beta_6 (SEI \times EFF) + \beta_7 (TRA \times EFF) + \varepsilon$$

where EFF represents effectuation, $EFF \times SEN$ represents the interaction between sensing capability and effectuation, $EFF \times SEI$ represents the interaction between seizing capability and effectuation, and $EFF \times TRA$ represents the interaction between transforming capability and effectuation.

Hypotheses are tested using bootstrapping in SmartPLS 3. The results are reported using standardized path coefficients (β), t-statistics, and p-values. A hypothesis is assisted when the path coefficient is in the predicted direction and statistically significant at the 5 percent level.

For moderation testing, effectuation is considered to have a moderating role when the interaction term is statistically significant. A significant and positive interaction coefficient indicates that effectuation strengthens the correlation between dynamic capabilities and SCA.

4. Result and Discussion

4.1 Repondent Profile

The final dataset consisted of 320 valid responses from Indonesian public sector organizations involved in the KIPP and SINOVIK ecosystem. This number exceeded the minimum sample requirement of 290 respondents determined in the methodology section. The respondents represented both central and regional government organizations, with 94 respondents, or 29.37 percent, from central government institutions and 226 respondents, or 70.63 percent, from regional government institutions.

The respondent profile indicates that the data were collected from public officials with adequate organizational knowledge of public service innovation. Most respondents were between 41 and 50 years old, accounting for 126 respondents or 39.38 percent. This age composition suggests that most respondents were in a mature career stage and were likely to understand organizational processes, policy implementation, and innovation sustainability. In terms of education, most respondents had higher education qualifications. Respondents with undergraduate, master's, and doctoral degrees accounted for 293 respondents or 91.56 percent of the total sample. This profile supports the reliability of the data because the constructs measured in this study, such as sensing capability, seizing capability, transforming capability, effectuation, and SCA, require sufficient conceptual and organizational understanding.

The largest proportion of respondents held Echelon IV or equivalent positions, representing 269 respondents or 84.06 percent. This finding indicates that most respondents occupied technical-managerial positions close to program implementation, service delivery, and innovation execution. Furthermore, most respondents had worked in their current position for 7–10 years, followed by those with 1–3 years of experience. This distribution proposes that the respondents had sufficient familiarity with organizational routines, innovation implementation, and the institutionalization of public service innovation.

Table 2. Respondent Profile

Characteristic	Category	Frequency	Percentage
Age	≤30 years	28	8.75%
	31–40 years	89	27.81%
	41–50 years	126	39.38%
	51–60 years	77	24.06%
Education	Diploma or equivalent	27	8.44%
	Undergraduate degree or equivalent	146	45.62%
	Master's degree or equivalent	122	38.12%
	Doctoral degree or equivalent	25	7.81%
Position	Echelon II	12	3.75%
	Echelon III	22	6.88%
	Echelon IV/equivalent	269	84.06%
	Functional position	12	3.75%

Characteristic	Category	Frequency	Percentage
Current position tenure	Staff/non-structural	5	1.56%
	<1 year	2	0.62%
	1–3 years	107	33.44%
	4–6 years	84	26.25%
	7–10 years	112	35.00%
	>10 years	15	4.69%
Institution origin	Central government	94	29.37%
	Regional government	226	70.63%

Source: Primary data processed, 2026.

4.2. Descriptive Statistics

Descriptive statistics were employed to discover the general tendency of respondents' answers for each study variable. All variables were assessed employing a 5-point Likert scale. The descriptive results show that all independent and moderating variables had high mean scores. Effectuation recorded the highest mean score at 3.64, followed by seizing capability at 3.63, sensing capability at 3.62, and transforming capability at 3.62. SCA had the lowest mean score at 3.42, although it remained within the high category.

This pattern is substantively important. It indicates that public sector organizations in the sample already perceive themselves as having relatively strong capabilities to seize opportunities, sense changes, transform organizational processes, and apply effectual decision-making. However, the lower mean score of SCA suggests that the sustainability of public service innovation has not yet reached the same level of strength as the organizational capabilities supporting it. In other words, public organizations may already have adaptive capabilities, but the conversion of these capabilities into sustained public value, institutionalized innovation, reputation, and durable relational architecture still requires further strengthening.

Table 3. Descriptive Statistics of Research Variables

Variable	Mean	Interpretation
Sensing capability	3.62	High
Seizing capability	3.63	High
Transforming capability	3.62	High
Effectuation	3.64	High
Sustained competitive advantage	3.42	High

Source: Primary data processed, 2026.

Among the DCV dimensions, seizing capability showed the highest mean score. This finding suggests that respondents perceived their institutions as relatively capable of connecting external knowledge with internal needs, identifying usable information, and translating knowledge into service improvements. Effectuation had the highest overall score, indicating that public organizations tend to use adaptive decision-making practices, such as experimentation, affordable risk, stakeholder involvement, flexibility, and use of available resources. Meanwhile, SCA had the lowest mean score, showing that maintaining innovation durability remains the central challenge in Indonesian public sector innovation.

4.3. Measurement Model Evaluation

The measurement model was examined using convergent validity, AVE, Cronbach's alpha, and composite reliability. Convergent validity was tested employing outer loading values. The outcomes present that all indicators had loading values > 0.70 . The lowest loading was 0.713 on the effectuation indicator, while the highest loading was 0.857 on the SCA indicator. Therefore, all indicators met the convergent validity criterion and were retained in the model. The AVE values for all constructs were also > 0.50 . The highest AVE was found in seizing capability at 0.681, while the lowest AVE was found in SCA at 0.610. These outcomes present that each construct was capable to describe more than 50 percent of the variance of its indicators. Thus, the constructs in this research fulfilled the requirement for convergent validity.

Table 4. Validity and Reliability of Constructs

Construct	AVE	Composite Reliability	Cronbach's Alpha	Result
Sensing capability	0.677	0.913	0.881	Valid and reliable
Seizing capability	0.681	0.895	0.844	Valid and reliable
Transforming capability	0.665	0.909	0.875	Valid and reliable
Effectuation	0.611	0.959	0.954	Valid and reliable
Sustained competitive advantage	0.610	0.916	0.893	Valid and reliable

Source: Primary data processed, 2026.

Reliability was assessed employing Cronbach's alpha and composite reliability. All constructs had composite reliability values > 0.70 , ranging from 0.895-0.959. Cronbach's alpha values also exceeded 0.70, ranging from 0.844 to 0.954. These outcomes verify that all constructs had strong internal consistency. Therefore, the measurement model was considered reliable and valid for further structural model analysis.

4.4. Structural Model Evaluation

The structural model was evaluated employing the determination's coefficient and predictive relevance. The R-square value for SCA was 0.554, while the adjusted R-square value was 0.544. This result presents that the capability of sensing, seizing, transforming, the effectuation, and the interaction terms collectively explained 55.4 percent of the variance in SCA. Based on the PLS-SEM assessment criteria, this explanatory power is categorized as moderate.

Table 5. Structural Model Evaluation

Endogenous Construct	R-square	Adjusted R-square	Interpretation
Sustained competitive advantage	0.554	0.544	Moderate explanatory power

Source: Primary data processed, 2026.

The result shows that SCA in public sector innovation is not explained by a single organizational capability. Rather, it is shaped by the assimilated role of the organization's competence to discover changes, capture opportunities, reconfigure resources, and apply effectual decision-making under uncertainty. The remaining 44.6 percent of variance may be described by other factors outside the model, such as leadership commitment, regulatory support, organizational culture, political stability, fiscal flexibility, digital infrastructure, or inter-organizational governance mechanisms.

The predictive relevance value reported in the analysis was 0.554. Since this value is > 0 , the model has predictive relevance for explaining SCA. This means that the proposed model has adequate predictive ability in the context of public sector innovation sustainability.

4.5. Hypothesis Testing

Hypothesis testing was carried out employing bootstrapping in SmartPLS. The assessment used t-statistics, path coefficients, and p-values. A hypothesis was supported when the path coefficient was significant and positive statistically at the 5 percent level.

4.5.1. Direct Effects

The outcomes display that all three dimensions of dynamic capabilities had significant and positive effects on SCA. Sensing capability had the strongest direct effect on SCA with a coefficient of 0.239, t-statistic of 4.063, and p-value of 0.000. Seizing capability also had a significant and positive impact with a coefficient of 0.219, t-statistic of 3.851, and p-value of 0.000. Transforming capability had a significant and positive impact with a coefficient of 0.172, t-statistic of 2.977, and p-value of 0.000.

Table 6. Direct Effect Hypothesis Testing

Hypothesis Relationship		Path Coefficient	STDEV	t-statistic	p-value	Decision
H1	Sensing capability → Sustainable competitive advantage	0.239	0.059	4.063	0.000	Supported
H2	Seizing capability → Sustainable competitive advantage	0.219	0.057	3.851	0.000	Supported
H3	Transforming capability → Sustainable competitive advantage	0.172	0.058	2.977	0.000	Supported

Source: Primary data processed, 2026.

These findings indicate that dynamic capabilities are fundamental antecedents of SCA in public sector innovation. The strongest direct effect came from sensing capability. This suggests that the ability to read environmental changes, understand citizen needs, monitor best practices, and access relevant information is the most influential DCV in sustaining public service innovation. Innovation sustainability in the public sector depends heavily on whether the organization can continuously detect changing public problems and policy demands. Without strong sensing capability, innovation may become detached from actual citizen needs and lose its relevance over time.

Seizing capability also significantly influenced SCA. This finding indicates that the ability to translate opportunities into decisions, service designs, resource commitments, and concrete improvements is crucial for sustaining public service innovation. Public organizations cannot rely only on environmental awareness. They must also be able to capture opportunities and convert them into actionable programs and institutional decisions.

Transforming capability had the smallest but still significant direct impact. This result shows that reconfiguring processes, structures, responsibilities, and resources remains important for sustaining innovation. However, the smaller coefficient may indicate that transformation in public organizations is more difficult because it involves bureaucratic procedures, formal authority, budget structures, and coordination across administrative layers. Thus,

transforming capability is essential, but its effect may require stronger institutional support and adaptive decision-making mechanisms.

4.5.2. Moderating Effects of Effectuation

The moderation test examined whether effectuation strengthened the correlation between each dimension of dynamic capabilities and SCA. The outcomes display that all interaction effects were positive and significant. The interaction between effectuation and sensing capability had a coefficient of 0.217, t-statistic of 4.305, and p-value of 0.000. The interaction between effectuation and seizing capability had a coefficient of 0.222, t-statistic of 4.999, and p-value of 0.000. The interaction between effectuation and transforming capability had a coefficient of 0.219, t-statistic of 4.688, and p-value of 0.000.

Table 7. Moderating Effect Hypothesis Testing

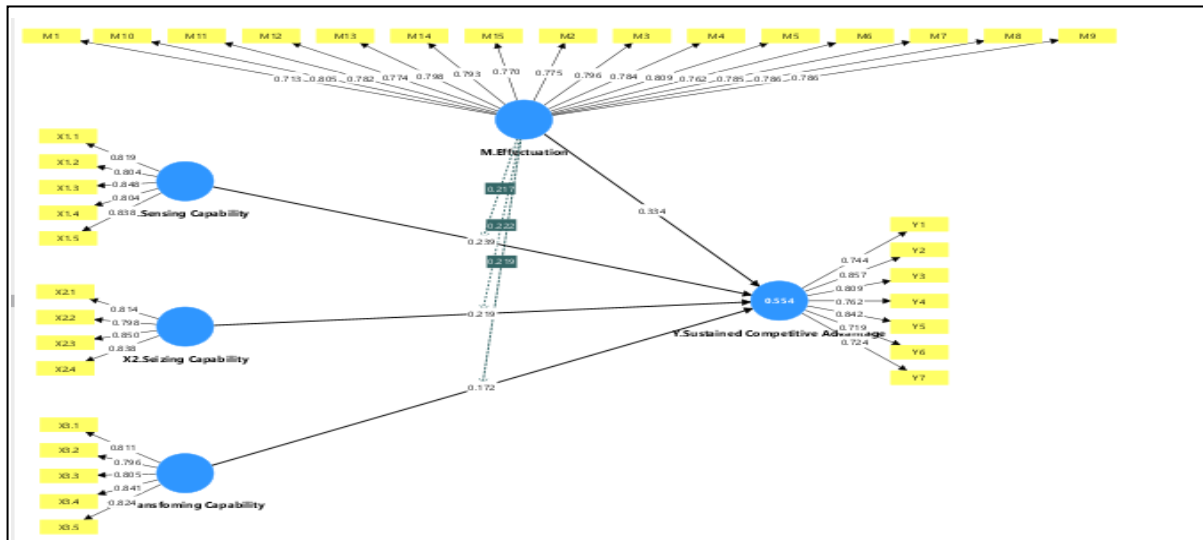
Hypothesis	Interaction Effect	Path Coefficient	STDEV	t-statistic	p-value	Decision
H4a	Effectuation × Sensing capability → Sustainable competitive advantage	0.217	0.050	4.305	0.000	Supported
H4b	Effectuation × Seizing capability → Sustainable competitive advantage	0.222	0.044	4.999	0.000	Supported
H4c	Effectuation × Transforming capability → Sustainable competitive advantage	0.219	0.047	4.688	0.000	Supported

Source: Primary data processed, 2026.

These results confirm that effectuation acts as a strengthening moderator. The strongest moderating impact was found in the correlation between seizing capability and SCA. This means that effectuation is particularly important when public organizations move from recognizing opportunities to making decisions and mobilizing resources. In uncertain public sector environments, seizing opportunities may be constrained by budget limitations, procedural rigidity, and risk aversion. Effectuation helps overcome these constraints by encouraging small-scale experimentation, affordable risk-taking, early stakeholder commitment, and flexible adjustment.

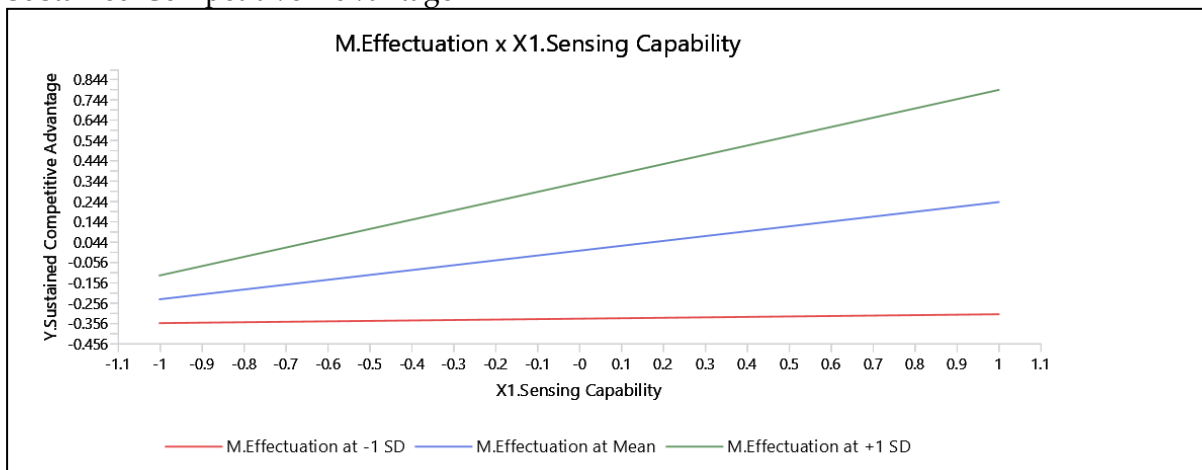
The simple slope patterns also support the moderation results. When effectuation was high, the correlation between each DCV dimension and SCA became stronger. When effectuation was low, the relationship became weaker. These patterns show that dynamic capabilities alone are not enough. Public organizations need an effectual decision-making logic to activate those capabilities and transform them into sustained public value.

Figure 1. Structural Model of Direct and Moderating Effects



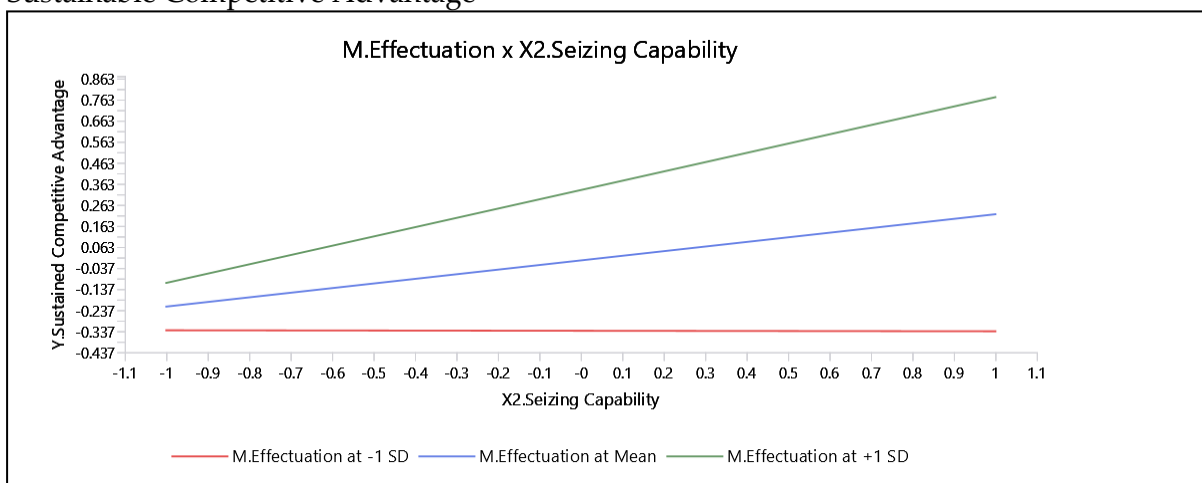
Source: Primary data processed, 2026.

Figure 2. Simple Slope of Effectuation on the Relationship between Sensing Capability and Sustained Competitive Advantage



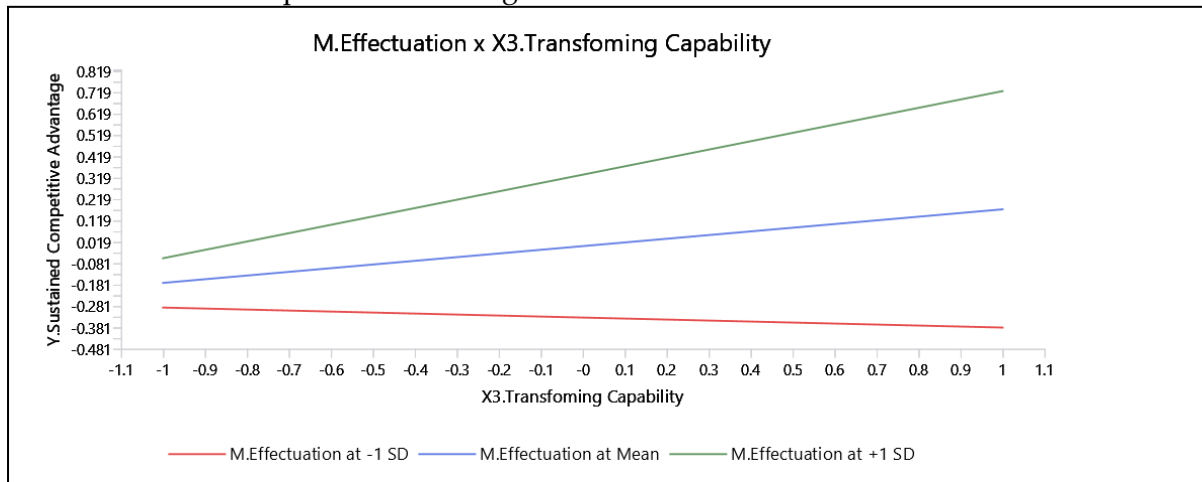
Source: Primary data processed, 2026.

Figure 3. Simple Slope of Effectuation on the Relationship between Seizing Capability and Sustainable Competitive Advantage



Source: Primary data processed, 2026.

Figure 4. Simple Slope of Effectuation on the Relationship between Transforming Capability and Sustainable Competitive Advantage



Source: Primary data processed, 2026.

4.6. Discussion

4.6.1. The Effect of Sensing Capability on Sustainable Competitive Advantage

The finding that sensing capability has a positive impact on SCA supports the DCV. Sensing capability enables public organizations to discover citizen needs, policy changes, technological opportunities, and best practices from other institutions. This capability in the public sector innovation is essential because innovation sustainability depends on the organization's ability to remain relevant to changing public problems.

This result also supports the Resource-Based View. Information, bureaucratic knowledge, service data, and stakeholder feedback are able to become strategic resources when they are difficult to imitate, valuable, and embedded in organizational routines. In Kay's framework of SCA, sensing capability strengthens relational architecture because it helps organizations understand stakeholders and build better coordination. It strengthens reputation because public organizations become more responsive and credible. It also strengthens innovation because service improvements are based on systematic external scanning rather than internal assumptions.

This outcome is consistent with prior researches presenting that sensing or identification capability contributes to innovation and organizational performance. However, it also helps explain why some prior studies found insignificant effects. In the context of KIPP and SINOVIK, sensing capability is directly connected to innovation sustainability because the sampled organizations already operate within an innovation-oriented ecosystem. Thus, sensing is not merely an information-gathering activity; it is a strategic capability that allows public organizations to maintain the relevance and continuity of public service innovation.

4.6.2. The Effect of Seizing Capability on Sustainable Competitive Advantage

The positive impact of seizing capability on SCA indicates that public organizations must be able to transform identified opportunities into concrete decisions, programs, and service improvements. Sensing capability provides awareness, but seizing capability provides execution. This finding confirms that innovation sustainability requires not only the ability to detect problems, but also the ability to allocate resources, design service responses, and commit organizational support.

In the public sector, seizing capability strengthens relational architecture through cooperation, coordination, and shared implementation mechanisms. It strengthens reputation because clear

decisions and accountable service improvements increase public confidence. It strengthens innovation because identified opportunities are converted into real service changes. This supports Teece's argument that seizing is the stage at which organizations mobilize resources to capture opportunities.

This finding is important because public sector organizations often face procedural rigidity and fragmented authority. The positive effect found in this study suggests that organizations involved in KIPP and SINOVIK have developed sufficient capacity to translate opportunities into action. Therefore, seizing capability becomes a critical bridge between environmental awareness and sustained public value.

4.6.3. The Effect of Transforming Capability on Sustainable Competitive Advantage

The positive impact of transforming capability on SCA indicates that innovation sustainability requires organizational reconfiguration. Public service innovation cannot survive only as a pilot project, a leadership initiative, or a competition entry. It must be embedded into structures, routines, standard operating procedures, resource allocation, and accountability mechanisms.

Transforming capability supports SCA by institutionalizing innovation. It strengthens relational architecture by clarifying roles, routines, and coordination patterns. It strengthens reputation by improving service consistency and reliability. It strengthens innovation because organizations become capable of modifying outdated processes and replicating successful innovations.

However, the coefficient of transforming capability was lower than those of sensing and seizing capability. This may reflect the reality that transformation is more difficult in public organizations. Reconfiguring structures, procedures, and resources requires formal authority, cross-unit coordination, budget support, and leadership continuity. Therefore, while transforming capability is significant, its effect may be more difficult to realize than sensing and seizing capabilities. This finding reinforces the argument that public sector innovation sustainability requires not only adaptive capability, but also institutional support for organizational change.

4.6.4. The Moderating Role of Effectuation in the Relationship between Sensing Capability and Sustainable Competitive Advantage

The outcome presents that effectuation strengthens the effect of sensing capability on SCA. This means that the ability to identify changes becomes more valuable when public organizations use effectual decision-making. Under high effectuation, organizations do not wait for perfect information before acting. Instead, they use available data, citizen feedback, front-line knowledge, and stakeholder input to conduct small experiments and learn quickly. This finding supports effectuation theory, which emphasizes action under uncertainty, available means, affordable loss, flexibility, and stakeholder commitment. In public sector innovation, sensing capability may produce large amounts of information, but information alone does not create sustainable advantage. Effectuation turns sensed information into controlled action. Therefore, effectuation explains why sensing capability can become more influential: it converts environmental awareness into experimentation, stakeholder engagement, and adaptive learning.

4.6.5. The Moderating Role of Effectuation in the Relationship between Seizing Capability and Sustainable Competitive Advantage

The strongest moderating effect was found in the correlation between seizing capability and SCA. This discovery presents that effectuation is most important at the decision and resource-

mobilization stage. In public organizations, seizing opportunities often requires decisions under uncertainty, limited budgets, procedural constraints, and stakeholder complexity. Effectuation strengthens this process by encouraging affordable experimentation, early commitment, flexible adjustment, and risk limitation.

This result answers an important theoretical gap. Prior studies show inconsistent effects of dynamic capabilities on performance because capabilities do not always translate into outcomes automatically. The present study shows that effectuation functions as an activation mechanism. Seizing capability becomes more effective when public organizations are willing to test opportunities through limited experiments, mobilize existing resources, and involve stakeholders early. Thus, effectuation strengthens the bridge between opportunity capture and sustainable public value.

4.6.6. The Moderating Role of Effectuation in the Relationship between Transforming Capability and Sustainable Competitive Advantage

The finding that effectuation strengthens the effect of transforming capability on SCA presents that organizational reconfiguration is more effective when conducted through adaptive, collaborative, and risk-conscious decision-making. Transformation in the public sector is often difficult because it involves changes in routines, formal procedures, work structures, and resource arrangements. Effectuation helps make this process more feasible by encouraging gradual experimentation, front-line involvement, stakeholder commitment, and learning-based adjustment.

This result suggests that transforming capability should not be understood only as a formal restructuring capacity. It also requires an adaptive logic that allows public organizations to institutionalize innovation without waiting for perfect conditions. Through effectuation, small pilots can be elevated into formal practices, procedures can be adjusted based on learning, and innovation can become more resilient across leadership changes and policy shifts. Therefore, effectuation strengthens the institutionalization process that is necessary for SCA in public sector innovation.

4.7. Theoretical and Practical Implications

Theoretically, this research integrates the RBV, DCV, SCA, and effectuation logic to explain innovation sustainability in the public sector. The discoveries support the argument that sustainable public service innovation is not established merely by the existence of innovation, but by organizational capabilities that allow innovation to remain relevant, institutionalized, and valuable over time. The study also extends the concept of SCA from the private sector to the public sector by interpreting advantage as sustained public value rather than market superiority.

The most important theoretical implication is the empirical support for effectuation as a moderating mechanism. This finding suggests that dynamic capabilities require an activation logic to produce sustainable advantage under uncertainty. Effectuation strengthens the influence of sensing, seizing, and transforming capabilities by making them more experimental, collaborative, risk-conscious, and adaptable. Therefore, this research contributes to explaining why dynamic capabilities may produce inconsistent effects in prior research: their impact depends partly on the decision-making logic used by the organization. Practically, the findings imply that public organizations should strengthen sensing, seizing, and transforming capabilities as an integrated innovation management system. Public organizations need systematic mechanisms to identify citizen needs, monitor policy and technological changes, translate opportunities into service improvements, and institutionalize

innovation into procedures, budgets, structures, and performance systems. Innovation should not be treated as a temporary project or competition output, but as a long-term organizational capability.

Public managers also need to apply effectuation as a practical decision-making approach. Innovation can begin from available resources, small-scale trials, affordable risks, stakeholder pre-commitments, and flexible adjustment. This approach is especially relevant for public organizations facing limited budgets, bureaucratic rigidity, and uncertainty. In addition, institutions responsible for public sector innovation development should evaluate innovation sustainability not only based on novelty or early success, but also based on evidence of institutionalization, resource support, stakeholder commitment, replication, and continuous public value creation.

5. Conclusion and Suggestion

The outcomes and discussion prove that SCA in public sector innovation is shaped by both organizational capabilities and the decision-making logic used to activate those capabilities. This study concludes that the capability of sensing, seizing, and transforming positively impact SCA. These findings indicate that public service innovation becomes more sustainable when public organizations are able to identify changing public needs, translate opportunities into concrete service improvements, and institutionalize innovation into organizational structures, procedures, routines, and resource allocation mechanisms.

Sensing capability provides to SCA by enabling public organizations to continuously read citizen needs, regulatory changes, best practices, and strategic information from the external environment. This capability helps innovation remain relevant and responsive rather than being driven solely by internal bureaucratic assumptions. Seizing capability contributes by converting identified opportunities into decisions, programs, resource commitments, and service improvements. Transforming capability contributes by embedding innovation into organizational routines, formal responsibilities, work processes, and institutional arrangements. Therefore, innovation sustainability in the public sector is not merely established by the competence to make new ideas, but by the capability to maintain, adapt, and institutionalize them over time.

This study also concludes that effectuation strengthens the correlation between each dimension of DCV and SCA. Effectuation strengthens the impact of sensing capability by helping public organizations transform strategic information into small experiments, stakeholder engagement, and early learning. It strengthens the effect of seizing capability by enabling organizations to capture opportunities through affordable risk, early commitment, flexibility, and controlled experimentation. It also strengthens the effect of transforming capability by helping organizations institutionalize change through gradual learning, collaboration, and adaptation to unexpected conditions. These findings show that dynamic capabilities become more effective when supported by an effectual decision-making logic.

Theoretically, this research contributes to the integration of the RBV, DCV, SCA, and Effectuation Theory in the context of Indonesian public sector innovation. The study extends the concept of SCA from a private-sector logic of market superiority to a public-sector logic of sustained public value. In this context, SCA is reflected in the ability of public organizations to maintain innovation, strengthen public trust, build relational architecture, and continuously renew services. The main novelty of this study lies in positioning effectuation as a moderating

mechanism that describes how dynamic capabilities are translated into sustainable public value under uncertainty.

Empirically, this study provides evidence from public organizations involved in the KIPP and SINOVIK ecosystem in Indonesia. The findings demonstrate that innovation sustainability is not only a matter of producing innovation or obtaining formal recognition, but also depends on organizational capabilities and adaptive decision-making practices. This evidence is relevant for explaining why many public service innovations may succeed at the early adoption stage but fail to survive as institutionalized practices. The findings suggest that public organizations need to strengthen both capability development and effectual execution to ensure that innovation continues beyond competition, leadership change, and short-term project cycles.

From an economic and managerial perspective, the findings imply that sustained public sector innovation can improve the efficiency of public resource use. When innovation is institutionalized, public organizations can reduce the risk of duplicated programs, abandoned pilot projects, and inefficient use of public budgets. Strong sensing, seizing, and transforming capabilities allow institutions to select relevant innovations, allocate resources more effectively, and maintain service improvements over time. Effectuation further supports economic efficiency by encouraging small-scale experimentation, affordable loss, and gradual scaling before large public resources are committed. Thus, the findings offer practical value for improving public service quality while minimizing waste in public innovation management.

Practically, the KemenPAN-RB should strengthen post-award innovation evaluation by shifting the focus from novelty and early success toward organizational capability for sustaining, developing, and replicating innovation. Evaluation should assess whether institutions have feedback systems, learning mechanisms, stakeholder commitment, recurring resource support, formalized procedures, and evidence of public value creation. In this way, innovation competitions can move beyond recognition and become instruments for ensuring that public service innovation is maintained and institutionalized.

Public organizations should also develop innovation sustainability plans based on service clusters. In basic services such as health, education, food security, waste management, environment, and disaster management, innovation should prioritize access, quality, response speed, and continuity of benefits. In administrative and legal certainty services such as licensing, civil registration, taxation, land administration, and governance, innovation should emphasize procedure simplification, data integration, service time certainty, transparency, and cross-unit institutionalization. In empowerment and protection services, innovation should strengthen community capacity, assistance mechanisms, and stakeholder involvement. In economic, environmental, and future resilience services, innovation should support organizational and community resilience against fiscal, ecological, and economic uncertainty. Finally, public sector leaders should apply effectuation as a practical innovation management approach. Innovation should not wait for perfect conditions, complete resources, or full certainty. Instead, leaders should encourage small pilot projects, clear benefit targets, affordable risk limits, cross-unit commitment, stakeholder participation, and periodic evaluation based on user feedback. Innovations that prove effective should be formalized into standard operating procedures, business processes, role distribution, budget allocation, and performance indicators. Through this approach, effectuation becomes not merely a willingness

to experiment, but a managerial system for transforming small experiments into sustainable public service practices.

6. Limitations and Future Research

Although this research gives empirical prove on the role of dynamic capabilities and effectuation in strengthening SCA in Indonesian public sector innovation, several limitations should be acknowledged. First, the data collection process depended on coordination with the KemenPAN-RB because the target respondents were public organizations involved in the KIPP and SINOVIK ecosystem. This limitation was not caused by an error in the research design, but by the administrative nature of access to public sector respondents. As a result, the distribution of questionnaires required formal coordination, repeated monitoring, and follow-up procedures, which may have influenced the speed of data collection and response rate.

Second, this study used perception-based questionnaire data. Although the respondents were directed to knowledgeable representatives from innovation-originating organizations, their responses may still be influenced by differences in experience, position, organizational knowledge, and proximity to the innovation process. This limitation may affect the measurement of organizational-level constructs such as seizing capability, sensing capability, transforming capability, effectuation, and SCA. Future studies should therefore combine survey data with objective evidence, such as post-award monitoring reports, innovation replication records, recurring budget allocations, standard operating procedures, service performance indicators, user statistics, and public satisfaction indices.

Third, the scope of this research was limited to public organizations associated with the KIPP and SINOVIK in Indonesia. Therefore, the findings are most relevant to public institutions that already have formal experience in public service innovation and innovation recognition. The results may not fully represent public organizations that have never participated in innovation competitions or have not developed formal innovation management practices. Future research may broaden the sample by comparing institutions that have received Top Innovation recognition with those that have not. Comparative studies between central and regional governments, Java and non-Java regions, or institutions with high and low innovation sustainability would also provide a more comprehensive explanation of public sector innovation sustainability.

Fourth, this research applied a cross-sectional survey design. The data reflect the condition of respondents and organizations at one point in time, while innovation sustainability is essentially a long-term process. Dynamic capabilities, effectuation, and SCA may change due to leadership transition, regulatory shifts, fiscal dynamics, technological development, and changing citizen needs. Future studies should use longitudinal designs to analyze the way of public service innovation evolves from creation and implementation to replication, institutionalization, and long-term sustainability.

Fifth, this research focused on 3 dimensions of dynamic capabilities, such as seizing, sensing, and transforming capability, and examined effectuation as a moderating variable. Although the model explains a meaningful proportion of SCA, other organizational and institutional factors may also impact the sustainability of public sector innovation. Future study may extend the model by including variables such as leadership commitment, organizational culture, digital maturity, fiscal flexibility, governance autonomy, stakeholder collaboration, learning mechanisms, and institutional support. These variables may provide a deeper

explanation of why some public sector innovations survive and develop, while others decline after the initial implementation stage.

Future research may also adopt mixed-method approaches. Quantitative analysis can be combined with interviews, case studies, or document analysis to capture the institutional process through which innovation becomes embedded in organizational routines. Such an approach would help explain not only whether dynamic capabilities and effectuation influence SCA, but also how these mechanisms operate in different public service contexts. By addressing these limitations, future studies can strengthen the theoretical development of public sector innovation sustainability and provide more practical guidance for public organizations seeking to maintain innovation beyond competition, recognition, and short-term project cycles.

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