

# PROVINCIAL GOVERNMENT AGENCY PUBLIC SERVICES: AN ANALYSIS OF THEIR INTERNAL COMPETENCY, INTERNAL AND EXTERNAL ENVIRONMENT FACTORS

Wiwat Thanapaet<sup>\*</sup>, Watcharin Sutthisai<sup>\*\*</sup>, Sittiporn Soonthorn<sup>\*\*</sup>,  
Ratchanida Saiyaros<sup>\*\*</sup>, Sathitkoon Boonruan<sup>\*\*\*</sup>

<sup>\*</sup> Corresponding author, Faculty of Political Science and Public Administration, Rajabhat Maha Sarakham University,  
Mueang Maha Sarakham, Thailand

Contact details: Faculty of Political Science and Public Administration, Rajabhat Maha Sarakham University, 80 Nakhonsawan Road,  
Mueang Maha Sarakham 44000, Thailand

<sup>\*\*</sup> Faculty of Political Science and Public Administration, Rajabhat Maha Sarakham University, Mueang Maha Sarakham, Thailand

<sup>\*\*\*</sup> Office of the Basic Education Commission (OBEC), Ministry of Education, Bangkok, Thailand



## Abstract

**How to cite this paper:** Thanapaet, W., Sutthisai, W., Soonthorn, S., Saiyaros, R., & Boonruan, S. (2023). Provincial government agency public services: An analysis of their internal competency, internal and external environment factors. *Journal of Governance & Regulation*, 12(2), 136–146.  
<https://doi.org/10.22495/jgrv12i2art12>

Copyright © 2023 The Authors

This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).  
<https://creativecommons.org/licenses/by/4.0/>

**ISSN Online:** 2306-6784

**ISSN Print:** 2220-9352

**Received:** 30.10.2022

**Accepted:** 12.05.2023

**JEL Classification:** D25, O19, Q01, Q25, Q56

**DOI:** 10.22495/jgrv12i2art12

Public services (PS) in modern societies have become increasingly difficult to keep up with, creating a strain on governments with limited budgets. As a result, new ways of delivering public value must be sought. In order to better understand the factors that influence public services of the Thai provincial government agency public services (PGAPS), the authors conducted a stratified random sample survey of 400 individuals in a rural province of Northern Thailand in 2021. The latent variable path analysis used LISREL 9.10, with the results showing that internal competency factors (ICF) were ranked as very strong, external environment factors (EEF) as strong, and internal environment factors (IEF) as weak. All four hypotheses were also supported, with an individual's personal and educational factors having a significant effect on PGAPS. The authors suggest that gender could be used to limit corruption's influence and should be explored in greater detail in further studies. Effective PS delivery requires good governance, community stakeholder involvement, and cross-organizational collective leadership. Good governance should also enhance economic, social, and political development values. Additionally, this study provides valuable insights for municipalities to improve their implementation processes, increase transparency, and ensure fiscal responsibility (OECD & ADB, 2019).

**Keywords:** Co-Production, Ethics, Governance, Municipalities, Public Services, Thailand

**Authors' individual contribution:** Conceptualization — W.T., W.S., S.S., and R.S.; Methodology — W.T., W.S., S.S., and R.S.; Software — W.T. and W.S.; Validation — W.T., W.S., R.S., and S.B.; Formal Analysis — W.T., R.S., and S.B.; Investigation — S.S., R.S., and S.B.; Resources — W.T., R.S., and S.B.; Data Curation — W.T. and R.S.; Writing — Original Draft — W.T. and R.S.; Writing — Review & Editing — W.T., W.S., and R.S.; Visualization — W.T. and W.S.; Supervision — W.S., S.S., and R.S.; Project Administration — W.T., W.S., S.S., and R.S.

**Declaration of conflicting interests:** The Authors declare that there is no conflict of interest.

**Acknowledgements:** The Authors wish to thank Ajarn Charlie for his assistance in English language editing, revision assistance, and final proofing.

## 1. INTRODUCTION

A public service (PS) is an organization-offered resource, either by a government agency or private firm, aimed at supporting the community. It includes diverse elements such as waste removal, health care, and transportation and is primarily aimed at meeting people's needs and expectations through being equal, sufficient, continuous, convenient, economical, and punctual (Lindgren et al., 2019; Office of the Civil Service Commission, n.d.).

Fatmawatie and Endri (2022) added that sound financial governance principles in PS should include accountability, efficiency, transparency, legitimacy, and inclusiveness. PS managers, according to Denhardt and Denhardt (2015), should act more as entrepreneurs, creating new, lean organizations in increasingly privatized environments, guided by their seven new public service (NPS) principles, which help citizens articulate and meet their shared interests.

On the other hand, new public governance (NPG) focuses on decentralization to local governments and operates as a strong social partnership. The national government gives up its role and authority to local organizations (Sriram et al., 2019). Mala (2018) added that NPG draws PS participation from all sectors of society, including private enterprises, civil society, and local communities.

New public management (NPM) is community-owned, competitive, results-focused, consumer-driven, privatized, anticipatory, decentralized, and market-oriented (Sriram et al., 2019; Supromin & Choonhakhlai, 2019). It has been around in most countries for over four decades, spreading from Anglo-Saxon countries to all Organization for Economic Cooperation and Development (OECD) countries, reshaping traditional, hierarchical public administrations (Lapuente & Van de Walle, 2020). NPM has been used by public organizations, privatized firms, and non-governmental organization (NGOs) since the late 1970s (Gruening, 2001).

Good governance, as noted by Tun et al. (2021), is essential for effective PS delivery, especially in developing countries like Thailand and Myanmar. In these developing regions, reform initiatives that create institutional capacity and good governance are required for international aid agency-financed PS projects. Huque (2005) noted that promoting good governance in South Asia requires institutional changes, strategic shifts, task orientation adjustments, and performance standards changes. Huque and Jongruck (2020) found similar goals but different methods to achieve them in civil service and governance reforms in Hong Kong and Thailand. In Thailand's healthcare system, Sapparojpatana (2020) stated that public governance relies on webs of shared rules for accountability.

Wallmeier et al. (2019) have added that public value management requires community stakeholder involvement for efficient, effective, and accountable outcomes. Haque (2001) noted that PS provisioning should have five elements: openness, equality, and representation, comprehensive access, publicness, public accountability, and public trust and credibility. Brewer et al. (1998) added that an individual's motivation in PS depends on organizational trust, management practices, and productivity.

The relationship between social networks and trust should also be considered, as high trust levels among network members may lead to distrust of those outside the network (Fledderus et al., 2014). Successful PS reform requires cross-organizational collaboration and collective leadership of change (Boyle & MacCarthaigh, 2011). PS should entail executive and political structure reorganization, community and enterprise function alignment with local systems, increased involvement in local economic and community development, greater service efficiencies, and revised funding agreements (Boyle & O'Riordan, 2013).

The quality of service is also crucial for any organization, whether government or private, and organizations should strive to build the highest quality of services to satisfy their consumers (Piyasunthornsakul et al., 2022). Recognizing the gap between current PS delivery and desired outcomes, organizations should focus on good governance. PSs are resources offered by an organization, either a government agency or private firm, with the intention of supporting the needs and expectations of a community. The goal of PS is to be equal, sufficient, continuous, convenient, economical, and punctual.

PS management is evolving, with a shift towards a more entrepreneurial approach, as seen in the NPS model which focuses on citizens articulating and meeting their shared interests (Denhardt & Denhardt, 2015). The NPG model emphasizes decentralization to local governments and a strong social partnership. The NPM model is community-owned, competitive, and results-focused, with a market-oriented administration (Indahsari & Raharja, 2020). Therefore, good governance is essential for effective PS delivery, and reform initiatives aimed at creating institutional capacity and promoting good governance are required in developing countries.

The quality of service is also of utmost importance for any organization, and it is critical for government and private organizations to build high-quality services to ensure customer satisfaction. Successful PS reform requires organizations to work across boundaries, have collective leadership of change, and prioritize service efficiency, funding agreements, and community and enterprise alignment.

The relationship between social networks and trust should also be considered, as high levels of trust within networks can sometimes lead to distrust of individuals outside the network. The dynamics between social networks and trust are important to consider when aiming to achieve effective, efficient, and accountable outcomes.

Therefore, recognizing the gap in the literature between PS research and developed nations, the authors investigated how Thai citizens perceived the use and capabilities of their local PS. The research probed how competency factors and internal environment and external environment factors (*EEF*) weigh on an individual's decision to use PSs and their satisfaction with them.

Furthermore, the authors offer the following research objectives for the study. These include:

1. The review of the theory and literature and determine which factors potentially play a role in a Southeast Asian rural provincial government agency public service (*PGAPS*).

2. To use confirmatory factor analysis (CFA) to determine the model fit of the conceptual factors.

3. After confirmation of the model's fit, use a structural equation model (SEM) to model and analyze the output of the latent and observed variables.

4. To recommend to government PS stakeholders, both in the public and private sectors, which factors potentially, have the most significant influence in providing efficient and effective government services.

The paper is structured as follows. Section 2 contains the reviews of the relevant literature, the four latent variables, and their conceptualized hypotheses. Section 3 presents the materials and methods used to conduct the empirical research. Section 4 includes the results from the research. Section 5 discusses the results. Section 6 contains the conclusion and the study's limitations.

## 2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

### 2.1. Internal competency factors (ICF)

Individuals may choose to collaborate or not with PS professionals in the service delivery process, with Van Eijk and Steen (2016) having explained why. Although governments often encourage citizens to participate in these initiatives, few actually do so. Verhoeven (2009) posits that the significance of a particular issue and the amount of time a person has available play a role in determining participation. Similarly, Pestoff (2012) suggests that an individual's perception of the importance of PS depends on how it affects their personal life, including friends and family (*personal factors*). Factors such as income, education, and profession also influence a person's willingness to volunteer in PS initiatives (*education factors*) (Sharp, 1984; Dekker & Halman, 2003).

In PS co-production, internal efficacy refers to an individual's confidence in their ability to understand and participate in the service delivery (Van Eijk & Steen, 2016). Co-production involves citizens' participation in the creation of public policy and services and can include the private and non-profit sectors as well (Bason, 2010). For the public sector specifically, effective management and control systems are needed to handle internal and external pressures (Capalbo et al., 2023).

Chansukree et al. (2022) found in a study of 1,360 PS employees that 72% spend at least one hour per day on social media while at work, for both work and non-work purposes (*media factors*). The research also found that employees with higher levels of social media competence were more likely to have more effective collaboration and seek assistance when needed.

Therefore, the authors added *personal factors (PF)*, *education factors (EdF)*, and *media factors (MF)* as observed variables for *internal competency factors (ICF)* and added the following two hypotheses to the conceptual model (Figure 1):

*H1: Internal competency factors (ICF) directly influence internal environment factors (IEF).*

*H2: Internal competency factors (ICF) directly influence external environmental factors (EEF).*

### 2.2. Internal environment factors (IEF)

According to Oliver (2001), where someone lives can contribute to their willingness to participate in PS activities. The author states that individuals in homogeneous socioeconomic communities are less likely to participate in PS activities. This is consistent with Thijssen and Van Dooren (2016), who determined that social connectedness (living environment and networks) played an essential role in explaining who takes part in PS activities (*space characteristics factors*). It should also be noted that there is no debate about the usefulness of the Internet and information communication technology (ICT) in providing PS to the citizenry. What is up for debate is where its use is most effective.

Some authors thus believe that the Internet is an excellent tool for collecting and retrieving information, but when an individual shifts to filling out an application and registering for PS, person-to-person contact is preferred, either through phone or an office visit (Reddick et al., 2022). Mukwarami et al. (2022) also reported on the importance and influences of corporate governance practices on public sector sustainable development, which the authors believe lacks accountability and transparency in emerging economies (*corporate culture factors*). Tun et al. (2021) added that transparency is the ingredient of good governance, which is needed to ensure that public institutions perform in responsive and accountable ways.

These ideas are consistent with Huque and Jongruck (2020), who also determined that rising costs and the lack of accountability and transparency affect the service quality of PS (*organizational characteristics factors*). Lapuente and Van de Walle (2020) have added that by implementing management ideas used in the private sector and business into PS, PS organizations should incentivize and reward specific PS employee performance.

Thus, the authors added *space characteristics factors (SF)*, *organizational characteristics factors (OCF)*, and *corporate culture factors (CCF)* as observed variables for *ICF* and added the following hypothesis to the conceptual model (Figure 1):

*H3: Internal environment factors (IEF) directly influence the provincial government agency public service (PGAPS).*

### 2.3. External environment factors (EEF)

External political efficacy is a term borrowed from political science that tries to explain how one believes about how government officials and agencies respond to citizen demands (Craig et al., 1990). Edelenbos et al. (2018) added that individuals who commiserate and identify with others' public purposes encourage them to self-organize. Kisby (2010) added that as civil society seeks smaller governments and bigger societies, there is increasing self-reliance and self-organization in civic engagement and public affairs (*political factors*). Therefore, this leads to new forms of community self-organization and newer forms of public policies (Marien et al., 2010).

There can also be no doubt that technology today in the form of social media platforms such as

Twitter and Facebook significantly influences all forms of PS discussions, both negative and positive (*technology factors*). Linders (2012) was an early examiner of this phenomenon and went on to state that social media initiates the re-emergence of citizen co-production, where citizens perform the role of a partner rather than a customer in the delivery of PS (*social factors*).

This is consistent with Bertot et al. (2012), who also saw social media as a tool to solve rising expectations from citizens concerning PS and the government’s need to use innovation and social media to meet e-government needs. In Thailand, efforts are underway to use a mobile smartphone app (Tang Raat) as an online channel for citizens to directly voice their opinions and concerns to Thai government agencies in their respective home provinces (Angskul, 2022). Other features also state that the app can pay bills and obtain government benefits information.

Thus, the authors added *political factors (PoF)*, *economic factors (EcF)*, *social factors (SoF)*, and *technology factors (TF)* as observed variables for *EEF* and added the following hypothesis to the conceptual model (Figure 1).

*H4: External environment factors (EEF) directly influence PGAPS.*

**2.4. Provincial government agency public services (PGAPS)**

Grönroos (2007) defined service as a process of intangible activities between PS staff and customers. Kotler (1997) defined PS as activities or actions offered by one group to another. A World Bank report (Shah, 2005) showed that local governments are based on theory and practice and five factors (financial health, legislative conformance, responsiveness, efficiency, and accountability) that require constant evaluation. Ebberts et al. (2016) showed that demographic factors (age, ethnicity, etc.) affect PS access, similar to student online education access and success.

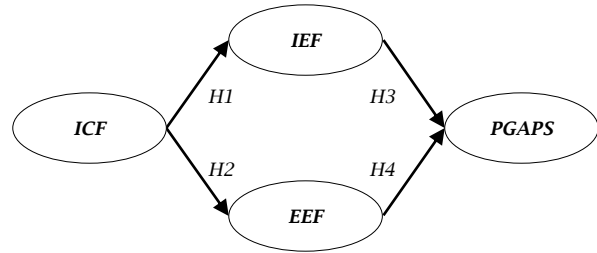
Chan et al. (2021) studied the impact of e-government services design on citizen satisfaction and highlighted the importance of digital technologies. Similarly, Galanis and Pazarskis (2023) in Greece have suggested how the local government organizations’ (LGOs) function has changed dramatically due to technological and economic changes. Therefore, this has necessitated the critical need for PS internal audits. Pazarskis et al. (2022) have also voiced concerns about the need for internal audits to ensure transparency within LGOs.

As such, 193 member states (United Nations Department of Economic and Social Affairs [UN DESA], 2018) have launched Internet portals for government information. Grönroos (2000) identified three critical elements for effective PS (core, facilitating, and supporting services) and 10 desired design characteristics (accessibility, accuracy, etc.). The OECD (2000) listed eight core service values (impartiality, justice, etc.). Galanis and Pazarskis (2023) in Greece noted how technology and economics have changed local government functions, necessitating internal audits (Pazarskis et al., 2022). Wixom and Todd (2005) discussed online PS accessibility based on an individual’s perception of ICT resources, and Meuter et al. (2000) compared online and physical access.

Thus, the authors added ten observed variables to *PGAPS* to investigate. These include *demand response (RN)*, *speed (Sp)*, *fairness and equality (FE)*, *quality and accessibility of service (QAS)*, *reliability (RE)*, *communication (CO)*, *participation (PA)*, *security (Se)*, *politeness and hospitality (PH)*, *understanding and empathy (UE)* as observed variables for *PGAPS* (Grönroos, 2000; OECD, 2000; Pakurár et al., 2019; Thijssen & Van Dooren, 2016).

Therefore, from the review of the theory and literature, the authors wish to propose the four hypotheses conceptual model depicted in Figure 1.

**Figure 1.** Proposed conceptual model



**3. METHODS**

**3.1. Population and sample**

The research used a population size of 1,049,972 adults over 18 years old in Roi-Et Province, Thailand as of September 21, 2021 (data from Roi-Et Provincial Registration Office). The sample was selected using systematic random sampling, proportional to each district’s population in the public list database of Roi-Et Province. The sample size was calculated based on the 10-20 questionnaires per variable guideline from Schumacker and Lomax (2015) and Hair et al. (2021). With 20 variables, the sample size was set between 200-400 individuals. Table 1 shows the sampling details for the 20 districts and sub-districts.

**Table 1.** Population size and collected questionnaires

District and sub-districts	Population	Questionnaires collected
Roi Et City	126,373	48
Kaset Wisai	79,182	30
Pathum Rat	43,474	17
Chaturaphak Phiman	65,571	25
Thawat Buri	55,689	21
Phanom Phrai	59,140	23
Phon Thong	87,394	33
Pho Chai	46,600	18
Nong Phok	52,427	20
Selaphum	97,198	37
Thung Khao Luang	19,086	7
Nong Hi	20,135	8
Chiang Khwan	22,432	9
Jangharn	32,339	12
Si Somdet	30,102	11
Moei Wadi	18,635	7
At Samat	59,556	23
Phon Sai	22,246	8
Muang Suang	19,142	7
Suwannaphum	93,251	36
<b>Totals</b>	<b>1,049,972</b>	<b>400</b>

Source: September 21, 2021, data from the Roi-Et Provincial Registration Office.

### 3.2. Research tools

The tool used for data collection was an opinion questionnaire about the Thai provincial government agency public services (PGAPS) in Thailand's rural Northeastern province of Roi-Et. The questionnaire contained five parts, with the respondents' characteristics detailed in Table 2 and the latent and observed variable items detailed in Table 3. Furthermore, a five-level Likert-type opinion scale was used to assess the level of agreement of each of the respondents, with '5' used to indicate the 'most agreement' (4.51-5.00), '4' to indicate 'strong agreement' (3.51-4.50), '3' to indicate 'moderate agreement' (2.51-3.50), '2' to indicate 'little agreement' (1.51-2.50), and '1' to indicate 'no agreement' (1.00-1.50). Finally, the range of Cronbach's alpha values was 0.76 to 0.80, which is acceptable to good (Taber, 2018).

### 3.3. Data collection

The researchers used systematic random sampling to select 400 individuals in one of 20 communities (districts or sub-districts) in Thailand's northeastern rural Roi-Et Province who used their PGAPS every month. Starting in October 2021 and lasting until the end of December 2021, a team of research assistants

from the authors' faculty assisted the researchers in soliciting and collecting the questionnaires.

### 3.4. Data analysis

Data analysis used LISREL 9.1 to determine the validity of the causal model path analysis and the variable interrelationships and how they affected the Thai PGAPS. Before the SEM analysis, a CFA and goodness-of-fit (GoF) analysis was undertaken.

## 4. RESULTS

### 4.1. Citizen demographics

Table 2 details the input summation from Part 1 of the questionnaire and shows that men comprised 57% of the respondents, with 35.25% being 31-40 years of age. As might be expected in a rural farming community, education levels were low, with 38.75% having only a primary school education and 10.5% had managed to obtain an undergraduate degree or higher. Concerning the respondents' professions, 32.25% indicated they were in sales or private businesses, another 24.5% in government service or state enterprises, and another 23.25% indicated they were farmers.

**Table 2.** Results of the respondents' demographic questionnaire characteristics (n = 400)

<i>General information</i>	<i>Frequency</i>	<i>Per cent</i>
<b><i>Gender</i></b>		
Male	228	57.00
Female	172	43.00
<b><i>Age</i></b>		
18-30 years of age	109	27.25
31-40 years of age	141	35.25
41-50 years of age	87	21.75
51 years of age or older	63	15.75
<b><i>Educational level</i></b>		
Primary school	155	38.75
Secondary school or equivalent	93	23.25
Diploma or vocational certificate	110	27.50
Bachelor's degree or equivalent or higher	42	10.50
<b><i>Occupation</i></b>		
Farmer	93	23.25
Sales/private business	129	32.25
Government service/state enterprise	98	24.50
Student	68	17.00
Other	12	3.00

### 4.2. Goodness-of-fit (GoF) assessment

The authors additionally conducted a validity assessment of the causal model. LISREL 9.1 software suggests values for the goodness-of-fit index (GFI)  $\geq 0.90$ , the comparative fit index (CFI)  $\geq 0.95$ , and the root mean square error of approximation (RMSEA)  $\leq 0.06$ . Hooper et al. (2008) have additionally suggested that  $\chi^2$  (Chi-square)  $p \geq 0.05$  and  $\chi^2/df$  (relative Chi-square)  $\leq 2.00$ . Schumacker and Lomax (2015) are often cited for their GoF value input with normed fit index (NFI)  $\geq 0.90$ , root mean square residual (RMR)  $\leq 0.05$ , standardized root mean square residual (SRMR)  $\leq 0.05$ , and adjusted goodness-of-fit index (AGFI)  $\geq 0.90$ . Numerous other studies have also suggested that Cronbach's alpha values be  $\geq 0.70$  (Taber, 2018). Therefore, from

the above criteria, it was determined that the model met all the established fit criteria as  $\chi^2 = 0.05$ ,  $\chi^2/df = 1.94$ , RMSEA = 0.06, NFI = 0.96, CFI = 0.98, RMR = 0.05, SRMR = 0.05, GFI = 0.90, AGFI = 0.90, and values for alpha were 0.75-0.80.

### 4.3. Confirmatory factor analysis (CFAs) assessment results

According to Jöreskog et al. (2016), CFAs should be done to assess a model's construct validity (CV), with strong CVs indicated by high discriminate and convergent validity values. Results of Table 3 from CFAs reliability and validity testing determined that the Cronbach's alpha values (0.75-0.80) (Taber, 2018), the average variance extracted (AVE) values (0.25-0.54), and the construct reliabilities (CR) (0.45-

0.87). Pimdee (2020) has also indicated that CV determination should use the AVE, main loading correlations, and CR. Finally, although acceptable R<sup>2</sup> values are difficult to determine in the literature,

numerous articles have suggested that R<sup>2</sup> values of 0.25, 0.50, and 0.75 are weak, moderate, and strong, respectively.

**Table 3.** The results of the CFA analysis of endogenous latent variables and exogenous latent variables

Latent variables	$\alpha$	AVE	CR	Observed variables	Loading	R <sup>2</sup>
Internal competency factors (ICF)	0.78	0.25	0.45	Personal factors (PF)	0.41	0.17
				Education factors (EdF)	0.41	0.17
				Media factors (MF)	0.34	0.12
Internal environment factors (IEF)	0.75	0.44	0.70	Space characteristics factors (SF)	0.55	0.31
				Organizational characteristic factors (OCF)	0.69	0.47
				Corporate culture factors (CCF)	0.49	0.24
External environment factors (EEF)	0.76	0.54	0.82	Political factors (PoF)	0.67	0.45
				Economic factors (EcF)	0.66	0.43
				Social factors (SoF)	0.84	0.71
				Technology factors (TF)	0.75	0.57
Provincial government agency public services (PGAPS)	0.80	0.42	0.87	Demand response (RN)	0.53	0.28
				Speed (Sp)	0.64	0.41
				Fairness and equality (FE)	0.66	0.44
				Quality and accessibility of service (QAS)	0.70	0.50
				Reliability (RE)	0.55	0.30
				Communication (CO)	0.47	0.22
				Participation (PA)	0.56	0.31
				Security (Se)	0.52	0.27
				Politeness and hospitality (PH)	0.80	0.63
				Understanding and empathy (UE)	0.79	0.62

**4.4. Latent variable analysis results**

Table 4 shows the correlation coefficient testing results for the latent variables and the mean, standard deviation, skewness, and kurtosis.

**4.5. Mediation effects**

Table 5 shows that ICF, EEF, and IEF positively influenced PGAPS, which had a total effect R<sup>2</sup> value

of 72%. Additionally, the latent variable total effect (TE) for the ICF, EEF, and IEF had TE values of 0.85, 0.73, and 0.16., respectively.

**4.6. Testing of the hypotheses**

Results from the PGAPS SEM hypotheses testing revealed that all four hypotheses were consistent with the data and supported (Figure 2 & Table 6).

**Table 4.** Latent variable r testing, mean, standard deviation, skewness, and kurtosis results

Latent variable	ICF	IEF	EEF	PGAPS
ICF	1.00	-	-	-
IEF	0.41**	1.00	-	-
EEF	0.35**	0.61**	1.00	-
PGAPS	0.33**	0.56**	0.87**	1.00
Mean	4.22	4.12	4.11	4.11
Standard deviation	0.21	0.26	0.29	0.25
Skewness	-0.49	-0.06	0.23	0.16
Kurtosis	0.25	-0.33	-0.27	-0.03

Note: \*\*Sig. < 0.01.

Source: Authors' LISREL 9.1 analysis.

**Table 5.** Standard coefficients of influence for PGAPS

Latent variable	IEF			EEF			PGAPS		
	DE	IE	TE	DE	IE	TE	DE	IE	TE
ICF	0.89**	-	0.89**	0.87**	-	0.87**	-	0.85**	0.85**
IEF	-	-	-	-	-	-	0.16**	-	0.16**
EEF	-	-	-	-	-	-	0.73**	-	0.73**
R <sup>2</sup>	0.80			0.76			0.72		

Note: \*\*Sig. ≤ 0.01.  $\chi^2 = 271.43$ ,  $df = 140$ ,  $RMR = 0.52$ ,  $CFI = 0.98$ ,  $GFI = 0.90$ ,  $AGFI = 0.90$ ,  $NFI = 0.96$ ,  $RMSEA = 0.066$ .

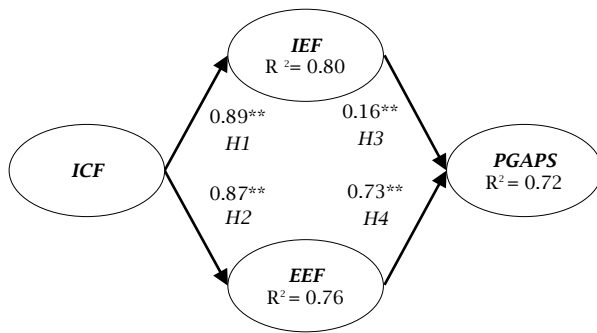
DE = direct effect; TE = total effect; IE = indirect effect.

**Table 6.** Research hypotheses test results

Hypothesis statements	Coefficient	t-test	Results
H1: ICF directly influence IEF.	0.89	7.63**	Consistent
H2: ICF directly influence EEF.	0.87	8.33**	Consistent
H3: IEF directly influence the PGAPS.	0.16	2.67**	Consistent
H4: EEF directly influence PGAPS.	0.73	6.86**	Consistent

Note: \*\*Sig. ≤ 0.01.

Figure 2. Final research model results



5. DISCUSSION

The study found that all four contributing variables have a positive impact on rural Thai PGAPS, resulting in an R<sup>2</sup> value of 72%. The latent variable TE values for ICF, EEF, and IEF were very strong (0.85), strong (0.73), and weak (0.16), respectively. The findings also confirmed all four hypotheses,

with survey participants indicating that personal and educational factors play a significant role in PGAPS.

5.1. Descriptive statistics

Hypotheses testing for ICF determined that both hypotheses were supported, with H1 (ICF to IEF) showing a very strong relationship with r = 0.89, t-value = 7.63, p ≤ 0.01. H2 was also very strong, with ICF to EEF having an r = 0.87, and a t-value = 8.33.

Furthermore, the descriptive statistics analysis in Table 7 showed that Roi-Et government services users felt that ICF was influenced most by EdF and PF. However, MF were considered to have the least influence.

This is consistent with Sharp (1984), who also found that socioeconomic variables like an individual’s education can play an essential role in contact with PS officials. Dekker and Halman (2003) later added that income, education, and profession helped explain a person’s willingness to volunteer in PS efforts.

Table 7. Thai PGAPS descriptive statistics

Latent and observed variables	Mean	St. dev.	Skewness	Kurtosis	Level
<b>Internal competency factors (ICF)</b>	4.22	0.21	-0.49	0.25	SA
Personal factors (PF)	4.25	0.29	-0.44	0.29	SA
Education factors (EdF)	4.24	0.37	-0.87	1.08	SA
Media factors (MF)	4.16	0.31	-0.20	-0.53	SA
<b>Internal environment factors (IEF)</b>	4.12	0.26	-0.06	-0.33	SA
Space characteristics factors (SF)	4.10	0.36	-0.13	-0.40	SA
Organizational characteristic factor (OCF)	4.09	0.37	-0.83	2.24	SA
Corporate culture factor (CCF)	4.17	0.32	-0.23	-0.24	SA
<b>External environment factors (EEF)</b>	4.11	0.29	0.23	-0.27	SA
Political factors (PoF)	4.13	0.32	-0.02	-0.26	SA
Economic factors (EcF)	4.07	0.37	-0.13	-0.38	SA
Social factors (SoF)	4.14	0.40	-0.22	0.35	SA
Technology factor (TF)	4.09	0.40	-0.06	0.06	SA
<b>Provincial government agency public services (PGAPS)</b>	4.11	0.25	0.16	-0.03	SA
Demand response (RN)	4.11	0.32	-0.23	-0.16	SA
Speed (Sp)	4.12	0.34	0.03	-0.03	SA
fairness and equality (FE)	4.05	0.38	0.17	-0.37	SA
Quality and accessibility of service (QAS)	4.16	0.38	-0.15	-0.13	SA
Reliability (RE)	4.15	0.36	-0.24	0.03	SA
Communication (CO)	4.08	0.30	-0.08	-0.14	SA
Participation (PA)	4.15	0.37	-0.10	-0.10	S.A
Security (Se)	4.09	0.33	0.00	-0.22	SA
Courtesy and courtesy (PH)	4.11	0.37	-0.13	-0.04	SA
Understanding and empathy (UE)	4.10	0.40	-0.20	0.15	SA

Note: SA = strong agreement.

5.2. Internal environment factors (IEF) hypotheses testing

The hypothesis test for IEF determined that it was supported, with H3 (IEF to PGAPS) showing a weak but positive relationship with r = 0.16, t-value = 2.67, and p ≤ 0.01. Furthermore, the descriptive statistics analysis in Table 7 showed that Roi-Et government services users felt that IEF was influenced most by CCF, the organization’s characteristics (OCF), and the SF.

5.3. External environment factors (EEF) hypotheses testing

The hypothesis test for IEF determined that it was supported, with H4 (EEF to PGAPS) showing a strong

relationship with r = 0.73, t-value = 6.86, and p ≤ 0.01. Furthermore, the descriptive statistics analysis in Table 7 showed that Roi-Et government services users felt that EEF was influenced most by SoF and PoF. However, EcF were considered the least important.

This is consistent with Thijssen and Van Dooren (2016), who determined that social connectedness (living environment and networks) played an essential role in explaining who participates in public service activities. Chapman (2000) has also added that in liberal democracies, the political environment determines public service objectives, the application of values, how public servants work, and their ethics. Similarly, Hossain et al. (2020) detailed how the lack of ethics and corruption has led to the lack of public trust in their officials, while Barafi et al. (2022) stated that

corruption is a constant dilemma that challenges societies, which has disastrous consequences on national and local economies and their communities.

However, in July 2014, Thailand's Prime Minister Prayut identified "12 core values as the moral compass for Thais" (Burford et al., 2019). Although the list is long and detailed, it includes honesty, gratefulness, morality, and discipline (Kerdtip & Angkulwattanakit, 2023).

#### 5.4. Provincial government agency public service (PGAPS) descriptive statistics

The results showed that rural Thai PGAPS users rated the QAS as the most important factor, with a mean score of 4.16 (SD = 0.38). This aligns with previous PS research, such as Wixom and Todd (2005) who found that users valued their ability to access and utilize ICT resources, and Meuter et al. (2000) who reported that users placed high importance on ease of access and use compared to visiting physical government offices. The RE and PA (mean = 4.15, SD = 0.36 and 0.37, respectively) of the services also ranked high in PGAPS influence according to the users. On the other hand, FE (mean = 4.05, SD = 0.38) were ranked at the bottom of the list of variables.

## 6. CONCLUSION

The authors used an SEM to investigate the interrelationships of four latent variables, 20 observed variables, and the four hypotheses. Before the SEM, a GoF assessment and a CFA were undertaken. This confirmed the model's strength and the interrelationships between Southeast Asian rural government agency PS.

The LISREL 9.1 analysis of the 400 PS users determined that all four causal variables positively influenced PGAPS, which, when combined, had an R<sup>2</sup> value of 72%. Additionally, the latent variable TE values for the ICF, EEF, and IEF were very strong, strong, and weak, respectively. All four hypotheses were also supported, with respondents indicating that a citizen's personal and educational factors significantly influence PGAPS.

PS is a resource offered by an organization, either government or private, to support a community's members, whose quality of service is essential for customer satisfaction (Pakurár et al., 2019). It can include waste removal, health care, and transportation and its goal is to respond to the needs of people by being equal, sufficient, convenient, economical and punctual. Sound financial governance should include accountability, efficiency, transparency, legitimacy and

inclusiveness (Fatmawatie & Endri, 2022; Lockwood et al., 2010). These then ensure PS organizational business continuity (Gennaro & Nietlispach, 2021). Public service managers are seen as entrepreneurs creating leaner organizations in a privatized environment.

NPS focuses on citizens articulating shared interests and NPG focuses on decentralization to local governments for stronger social partnerships. NPM is community-owned, results-focused, and decentralized.

Effective public service delivery requires good governance, community stakeholder involvement and cross-organizational boundary work with collective leadership. Good governance should enhance economic, social, and political development values. Social networks and trust should also be considered. PS reform should include executive and political structure reorganization, community and enterprise alignment, service efficiencies and revised funding agreements.

These recommendations are also supported by OECD (2019) studies concerning public sector employee leadership and capabilities. In one report, 14 principles are highlighted which include building leadership and values, as well as recruiting and retaining skilled employees. Discussion is also given to the recruitment, selection, and promotion of PS candidates through a transparent, open, and merit-based process that guarantees fair and equal treatment. Moreover, the statement from the United Nations Development Programme (UNDP, 1997) that "good governance and human development are intimately related, and one cannot be sustained without the other" is true more than ever.

The study is limited because the sample was taken from a single rural province in northeastern Thailand. The study's findings can act as a guideline for the local government and policymakers to improve the service quality to the local community's members (Piyasunthornsakul et al., 2022). Secondly, to the best of the authors' knowledge, that are no other studies regarding the local government service quality for Roi-Et, Thailand. A study with similar variables and sample size drawn from an urban population such as Bangkok will probably draw different conclusions. Interestingly, the authors noted from other studies that gender can play a role in PS quality and limit the influence of corruption within a system. Therefore, this needs to be explored further in follow-on studies.

Future studies might use a mixed-methods approach, which could include in-depth interviews with PS management teams, community focus groups, non-participatory observation, and content analysis, for a similar study and sample (Supromin & Choonhakhlai, 2019).

## REFERENCES

1. Angskul, T. (2022, July 15). Government launches all-in-one app to enhance public services. *National News Bureau of Thailand*. <https://thainews.prd.go.th/en/news/detail/TCATG220715121734625>
2. Barafi, J., Alkrisheh, M. A., Al-Obeidi, A. H., Alsaadi, S., & Mahameed, W. F. (2022). Anti-corruption mechanisms: A study in the light of international law and national regulation [Special issue]. *Journal of Governance & Regulation*, 11(4), 224-236. <https://doi.org/10.22495/jgrv11i4siart3>
3. Bason, C. (2010). *Leading public sector innovation: Co-creating for a better society* (1st ed.). Bristol University Press. <https://doi.org/10.2307/j.ctt9qgnsd>



4. Bertot, J. C., Jaeger, P. T., & Hansen, D. (2012). The impact of policies on government social media usage: Issues, challenge, and recommendations. *Government Information Quarterly*, 29(1), 30–40. <https://doi.org/10.1016/j.giq.2011.04.004>
5. Bolton, R. N., & Drew, J. H. (1991). A multistage model of customers' assessments of service quality and value. *Journal of Consumer Research*, 17(4), 375–384. <https://doi.org/10.1086/208564>
6. Boyle, R., & MacCarthaigh, M. (2011). *Fit for purpose? Challenges for Irish public administration and priorities for public service reform* (State of the Public Service Series Research Paper No. 4). Institute of Public Administration. [https://www.ipa.ie/\\_fileUpload/Documents/Fit\\_For\\_Purpose\\_New\\_Report.pdf](https://www.ipa.ie/_fileUpload/Documents/Fit_For_Purpose_New_Report.pdf)
7. Boyle, R., & O'Riordan, J. (2013). *Capacity and competency requirements in local government* (Local Government Research Series, Paper No. 5). Institute of Public Administration. [https://www.ipa.ie/\\_fileUpload/Documents/CAPACITYandCOMPETENCY\\_SEPT2013.pdf](https://www.ipa.ie/_fileUpload/Documents/CAPACITYandCOMPETENCY_SEPT2013.pdf)
8. Brewer, G. A., & Selden, S. C. (1998). Whistle blowers in the federal civil service: New evidence of the public service ethic. *Journal of Public Administration Research and Theory*, 8(3), 413–440. <https://doi.org/10.1093/oxfordjournals.jpart.a024390>
9. Burford, J., Uerpaiojkit, T., Eppolite, M., & Vachananda, T. (2019). Analysing the national and institutional policy landscape for foreign academics in Thailand: Opportunity, ambivalence, and threat. *Journal of Higher Education Policy and Management*, 41(4), 416–429. <https://doi.org/10.1080/1360080X.2019.1606881>
10. Capalbo, F., Ippolito, A., Smarra, M., & Sorrentino, M. (2023). The evolution of performance measurement systems in public health organizations: A preliminary analysis. In E. Karger & A. Kostyuk (Eds.), *Corporate governance: An interdisciplinary outlook* (pp. 57–60). Virtus Interpress. <https://doi.org/10.22495/cgaiop12>
11. Chan, F. K., Thong, J. Y. L., Brown, S. A., & Venkatesh, V. (2021). Service design and citizen satisfaction with e-government services: A multidimensional perspective. *Public Administration Review*, 81(5), 874–894. <https://doi.org/10.1111/puar.13308>
12. Chansukree, P., Sagarik, D., & Cho, W. (2022). Public employee use of social media at work: Competency, collaboration, and communication of workplace policy. *Public Personnel Management*, 51(3), 330–354. <https://doi.org/10.1177/00910260221098737>
13. Chapman, R. A. (Ed.). (2000). *Ethics in public service for the new millennium*. Routledge. <https://doi.org/10.4324/9781315191645>
14. Craig, S. C., Niemi, R. G., & Silver, G. E. (1990). Political efficacy and trust: A report on the NES pilot study items. *Political Behavior*, 12(3), 289–314. <https://doi.org/10.1007/BF00992337>
15. Dekker, P., & Halman, L. (2003). Volunteering and values. In P. Dekker & L. Halman (Eds.), *The values of volunteering*, (pp. 1–17). Springer. [https://doi.org/10.1007/978-1-4615-0145-9\\_1](https://doi.org/10.1007/978-1-4615-0145-9_1)
16. Denhardt, J. V., & Denhardt, R. B. (2015). *The new public service: Serving, not steering* (4th ed.). Routledge. <https://doi.org/10.4324/9781315709765>
17. Ebbers, W. E., Jansen, M. G. M., & van Deursen, A. J. A. M. (2016). Impact of the digital divide on e-government: Expanding from channel choice to channel usage. *Government Information Quarterly*, 33(4), 685–692. <https://doi.org/10.1016/j.giq.2016.08.007>
18. Edelenbos, J., van Meerkerk, I., & Schenk, T. (2018). The evolution of community self-organization in interaction with government institutions: Cross-case insights from three countries. *The American Review of Public Administration*, 48(1), 52–66. <https://doi.org/10.1177/0275074016651142>
19. Fatmawatie, N., & Endri, E. (2022). Implementation of the principles of financial governance in service companies. *Journal of Governance & Regulation*, 11(4), 33–45. <https://doi.org/10.22495/jgrv11i4art4>
20. Fledderus, J., Brandsen, T., & Honingh, M. (2014). Restoring trust through the co-production of public services: A theoretical elaboration. *Public Management Review*, 16(3), 424–443. <https://doi.org/10.1080/14719037.2013.848920>
21. Galanis, S., & Pazarskis, M. (2023). Internal audit's assistance to local government organizations' e-services security procedures: The Greek case. In E. Karger & A. Kostyuk (Eds.), *Corporate governance: An interdisciplinary outlook* (pp. 39–42). Virtus Interpress. <https://doi.org/10.22495/cgaiop8>
22. Gennaro, A., & Nietlispach, M. (2021). Corporate governance and risk management: Lessons (not) learnt from the financial crisis. *Journal of Risk and Financial Management*, 14(9), Article 419. <https://doi.org/10.3390/jrfm14090419>
23. Grönroos, C. (2000). *Service management and marketing: A customer relationship management approach* (2nd ed.). John Wiley & Sons.
24. Grönroos, C. (2007). *Service management and marketing: Customer management in service competition* (3rd ed.). John Wiley & Sons.
25. Gruening, G. (2001). Origin and theoretical basis of new public management. *International Public Management Journal*, 4(1), 1–25. [https://doi.org/10.1016/S1096-7494\(01\)00041-1](https://doi.org/10.1016/S1096-7494(01)00041-1)
26. Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.
27. Haque, M. S. (2001). The diminishing publicness of public service under the current mode of governance. *Public Administration Review*, 61(1), 65–82. <https://doi.org/10.1111/0033-3352.00006>
28. Hooper, D., Coughlan, J., & Mullen, M. (2008). Structural equation modelling: Guidelines for determining model fit. *Electronic Journal of Business Research Methods*, 6(1), 53–60. <https://doi.org/10.21427/D7CF7R>
29. Hossain, F., Kumasey, A. S., Rees, C. J., & Mamman, A. (2020). Public service ethics, values and spirituality in developing and transitional countries: Challenges and opportunities. *Public Administration and Development*, 40(3), 147–155. <https://doi.org/10.1002/pad.1890>
30. Huque, A. S. (2005). Explaining the myth of public sector reform in South Asia: De-linking cause and effect. *Policy and Society*, 24(3), 97–121. [https://doi.org/10.1016/S1449-4035\(05\)70062-X](https://doi.org/10.1016/S1449-4035(05)70062-X)
31. Huque, A. S., & Jongruck, P. (2020). Civil service reforms in Hong Kong and Thailand: Similar goals, different paths. *Public Administration and Policy: An Asia-Pacific Journal*, 23(2), 111–123. <https://doi.org/10.1108/PAP-03-2020-0015>
32. Indahsari, C. L., & Raharja, S. J. (2020). New public management (NPM) as an effort in governance. *Jurnal Manajemen Pelayanan Publik*, 3(2), 73–81. <https://doi.org/10.24198/jmpp.v3i2.25342>

33. Jöreskog, K. G., Olsson, U. H., & Wallentin, F. Y. (2016). *Multivariate analysis with LISREL*. Springer. <https://doi.org/10.1007/978-3-319-33153-9>
34. Kerdtip, C., & Angkulwattanakit, R. (2023). Thai school learning communities (SLC): An exploratory factor analysis. *Journal of Higher Education Theory and Practice*, 23(1), 226-237. <https://doi.org/10.33423/jhetp.v23i1.5803>
35. Kisby, B. (2010). The big society: Power to the people? *Political Quarterly*, 81(4), 484-491. <https://doi.org/10.1111/j.1467-923X.2010.02133.x>
36. Kotler, P. (1997). *Marketing management: Analysis planning implementation and control* (9th ed.). Prentice Hall.
37. Lapuente, V., & Van de Walle, S. (2020). The effects of new public management on the quality of public services. *Governance*, 33(3), 461-475. <https://doi.org/10.1111/gove.12502>
38. Linders, D. (2012). From e-government to we-government: Defining a typology for citizen coproduction in the age of social media. *Government Information Quarterly*, 29(4), 446-454. <https://doi.org/10.1016/j.giq.2012.06.003>
39. Lindgren, I., Madsen, C. Ø., Hofmann, S., & Melin, U. (2019). Close encounters of the digital kind: A research agenda for the digitalization of public services. *Government Information Quarterly*, 36(3), 427-436. <https://doi.org/10.1016/j.giq.2019.03.002>
40. Lockwood, M., Davidson, J., Curtis, A., Stratford, E., & Griffith, R. (2010). Governance principles for natural resource management. *Society & Natural Resources*, 23(10), 986-1001. <https://doi.org/10.1080/08941920802178214>
41. Mala, T. (2018). New public governance (NPG): Concept and application for local governance. *Valaya Alongkorn Review (Humanities and Social Science)*, 8(1), 179-194. [http://acad.vru.ac.th/Journal/journal%208\\_1/8\\_1\\_14.pdf](http://acad.vru.ac.th/Journal/journal%208_1/8_1_14.pdf)
42. Marien, S., Hooghe, M., & Quintelier, E. (2010). Inequalities in non-institutionalised forms of political participation: A multilevel analysis of 25 countries. *Political Studies*, 58(1), 187-213. <https://doi.org/10.1111/j.1467-9248.2009.00801.x>
43. Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: Understanding customer satisfaction with technology-based service encounters. *Journal of Marketing*, 64(3), 50-64. <https://doi.org/10.1509/jmkg.64.3.50.18024>
44. Mukwarami, S., Fakoya, M. B., & Tayob, N. S. (2022). The influence of corporate governance practices on public sector sustainable development: A developing economy study. *Journal of Governance & Regulation*, 11(4), 202-214. <https://doi.org/10.22495/jgrv11i4siart1>
45. Office of the Civil Service Commission (OCSC). (n.d.). *Public service delivery in Thailand*. The Royal Government of Thailand. <https://tinyurl.com/cyas3wmt>
46. Oliver, J. E. (2001). *Democracy in Suburbia*. Princeton University Press. <https://books.google.sm/books?id=jBLv0lugliwC&printsec=copyright&hl=it#v=onepage&q&f=false>
47. Organization for Economic Cooperation (OECD). (2019, January 17). *OECD recommendation on public service leadership and capability*. <https://www.oecd.org/gov/pem/recommendation-on-public-service-leadership-and-capability.htm>
48. Organization for Economic Cooperation and Development (OECD). (2000). *Trust in government: Ethics measures in OECD countries*. <https://doi.org/10.1787/9789264187986-en>
49. Organization for Economic Cooperation and Development, & Asian Development Bank (OECD, & ADB). (2019). *Government at a glance Southeast Asia 2019*. OECD Publishing. <https://doi.org/10.1787/9789264305915-en>
50. Pakurár, M., Haddad, H., Nagy, J., Popp, J., & Oláh, J. (2019). The service quality dimensions that affect customer satisfaction in the Jordanian banking sector. *Sustainability*, 11(4), Article 1113. <https://doi.org/10.3390/su11041113>
51. Pazarskis, M., Tavellaris, G., & Galanis, S. (2022). The internal audit function in Greek local government organisations: Critical factors of success. *International Journal of Critical Accounting*, 13(1), 60-74. <https://doi.org/10.1504/IJCA.2022.10051475>
52. Pestoff, V. (2012). Co-production and third sector social services in Europe. In V. Pestoff, T. Brandsen, & B. Verschuere (Eds.), *New public governance, the third sector and co-production*, (pp. 13-34). Routledge. <https://tinyurl.com/cwtd3txa>
53. Pimdee, P. (2020). Antecedents of Thai student teacher sustainable consumption behavior. *Heliyon*, 6(8), Article e04676. <https://doi.org/10.1016/j.heliyon.2020.e04676>
54. Piyasunthornsakul, P., Yangprayong, P., & Phayaphrom, B. (2022). Evaluating the citizen satisfaction on service quality using the SERVQUAL model: The case of Kaeng Khol municipality, Thailand. *Journal of Management in Business, Healthcare, and Education*, 1(2), 1-19. <https://ssrn.com/abstract=4005048>
55. Reddick, C. G., Perlman, B. J., & Demir, T. (2022). Citizen satisfaction with public service delivery: A test of alternative theories. *Canadian Public Administration*, 65(2), 352-371. <https://doi.org/10.1111/capa.12464>
56. Sapparojpatana, W. (2020). Management, collaboration and new public governance: A case study of a public hospital in Thailand. *Public Administration Issues*, 5(1), 171-190. <https://doi.org/10.17323/1999-5431-2020-05-171-190>
57. Schumacker, R. E., & Lomax, R. G. (2015). *A beginner's guide to structural equation modeling* (4th ed.). Routledge. <https://doi.org/10.4324/9781315749105>
58. Shah, A. (Ed.). (2005). *Public service delivery. Public sector governance and accountability*. World Bank Publications. <http://hdl.handle.net/10986/7424>
59. Sharp, E. B. (1984). Citizen-demand making in the urban context. *American Journal of Political Science*, 28(4), 654-670. <https://doi.org/10.2307/2110992>
60. Sriram, N., Misomnai, C., Metasuttirat, J., & Rajphaetyakhom, C. (2019). A comparative analysis of new public management, new public service and new public governance. *Asian Political Science Review*, 3(2), 32-39. <https://ssrn.com/abstract=3553641>
61. Supromin, C., & Choonhakhlai, S. (2019). The provision of public services in municipalities in Thailand to improve the quality of life of elderly people. *Kasetsart Journal of Social Sciences*, 40(3), 619-627. <https://so04.tci-thaijo.org/index.php/kjss/article/view/242294>
62. Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education*, 48, 1273-1296. <https://doi.org/10.1007/s11165-016-9602-2>

63. Thijssen, P., & Van Dooren, W. (2016). Who you are/where you live: Do neighbourhood characteristics explain co-production? *International Review of Administrative Sciences*, 82(1), 99-120. <https://doi.org/10.1177/0020852315570554>
64. Tun, S. K. T., Lowatcharin, G., Kumnuansilpa, P., & Crumpton, C. D. (2021). Considering the responsiveness, accountability and transparency implications of hybrid organization in local governance: A comparison of public service provision approaches in Myanmar and Thailand. *Asia-Pacific Social Science Review*, 21(2), 125-142. <https://tinyurl.com/39d7jzyh>
65. United Nations Department of Economic and Social Affairs (UN DESA). (2018). *E-government survey 2018: gearing e-government to support transformation towards sustainable and resilient societies*. United Nations. <https://tinyurl.com/m3dn7a2a>
66. United Nations Development Programme (UNDP). (1997). *Governance for sustainable human development: A UNDP policy document*. United Nations. <https://tinyurl.com/yxw523b3>
67. Van Eijk, C., & Steen, T. (2016). Why engage in co-production of public services? Mixing theory and empirical evidence. *International Review of Administrative Sciences*, 82(1), 28-46. <https://doi.org/10.1177/0020852314566007>
68. Verhoeven, P. S. (2009). *Quality in statistics education: Determinants of course outcomes in methods & statistics education at universities and colleges*. [PhD dissertation, Amsterdam Boom Onderwijs]. <https://tinyurl.com/mrzhdzy>
69. Wallmeier, F., Helming, B., & Feeney, M. K. (2019). Knowledge construction in public administration: A discourse analysis of public value. *Public Administration Review*, 79(4), 488-499. <https://doi.org/10.1111/puar.13005>
70. Wixom, B. H., & Todd, P. A. (2005). A theoretical integration of user satisfaction and technology acceptance. *Information Systems Research*, 16(1), 85-102. <https://doi.org/10.1287/isre.1050.0042>