

FACTORS AFFECTING THE ACHIEVEMENT OF DIGITAL LOCAL GOVERNANCE DEVELOPMENT: A CASE STUDY OF PAK KRED CITY MUNICIPALITY, NONTHABURI PROVINCE

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ABSTRACT

This research was conducted to analyze the factors influencing the achievement of digital local governance development of Pak Kred city municipality in Nonthaburi province, where was selected as a case study. The research used a quantitative approach. The population for the study consisted of 15,942 peoples accessing the municipality s' e-service system. A sample size comprised 400 people determined based on Taro Yamane's formula and selected by multi-stage sampling. A structured questionnaire was used as the research data collection tool, and collected data were analyzed using statistical software for stepwise multiple regression with a 95% confidence level. The findings revealed that the factors influencing the achievement of digital local governance development of Pak Kred city municipality has a coefficient of determination or R^2 of 0.861. It means the five predictive variables in the regression model can predict 86.1% of the studied factors. Each influences the prediction of the following dependent variables: 1) Internal Organization Management (X 3) ($\beta = 0.283$), 2) Partnerships & Participation (X5) ($\beta = 0.237$), 3) Innovation Driving Mechanisms (X2) ($\beta = 0.204$), 4) Digital Transformation Policy (X1) ($\beta = 0.172$), and 5) Environment & Community Context (X4) ($\beta = 0.092$).

Keywords: Digital Local Governance, Local Innovation, Pak Kred City Municipality

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INTRODUCTION

Innovation is regarded as a major driver to promote economic and social development. It leads to sustainable growth and advancement at national level while at organizational level it also support several organizations in adapting to diverse situations to survive in high competitive environment (Demircioglu et al., 2019). The Thai government has seen the application of technological and innovative advancement to public services as important. In 2019, the government promulgated the Digital Government Administration and Services Act, B.E. 2562 (2019) in order that the public administration and services can be effective, productive, and responsive to people. It is also to facilitate people, to promote transparency, and to create public participation across all sectors. Moreover, the 13th National Economic and Social Development Plan B.E. 2566 – 2570 (2023–2027) determines the improvement policy of public structure and administration systems to respond to economic, social, and technological changes under good governance and high efficiency. These ways have influenced public organizations to implement technology and innovation in providing public services for people's well-being. In particular, local administrative organizations have extremely been influenced in terms of technological and innovative initiation for public service under the “Digital Local Governance” policy.

"Digital Local Governance" is a strategy on digital technology development in local administrative organizations according to the national and the Department of Local Administration policies. This strategy focuses on collaborative efforts among partner organizations from all sectors to transform local administrative organizations into digital and innovative worlds. The important development guidelines for this strategy include establishing a central database (Big Data) to enable local administrative organizations to utilize data for effective management and to enhance public service systems in line with citizens' needs and problems, promoting local administrative organizations to provide internet-based public services, enhancing e-commerce integration to facilitate the linkage of local product data in expanding market access, developing policies to transform local staff into digital-era service providers, empowering local organizations with IT skills to become hubs for improving residents' IT capabilities, and building leadership in information technology within local administrative organizations to drive digital transformation (Department of Local Administration, 2016).

The implementation of the “Digital Local Governance” policy in local administrative organizations has encountered many challenges due to unclear administrative processes and regulations, as well as fragmented management of each organization. To deal with these challenges, becoming digital and innovative organizations has to be prepared. This preparation requires a development plan based on essential organizational data for data management in creating central database (Big Data). However, the current situations of these organizations in data management remain disorganized, with duplication and errors in data management. This hinders the integration of information necessary for different departments to collaborate effectively in providing public services. Additionally, the local administrative organizations' potential is very low in applying technology to work performance, gaining high advantage in any competitive situations, and creating interconnected public networks for information sharing to internal and external organization as well as the public. Consequently, the adoption of the digital local governance policy by local administrative organizations has not been as successful as anticipated (Kokpol et al., 2020).

In Pak Kret city municipality in Nonthaburi province uses digital technology to improve public services (front office) through an online queue and appointment system available on LINE, Facebook, and website. This system leads to efficient and accessible services for people. Moreover, the municipality employs digital technology for internal administration (back office) through the Emergency Maintenance Service (EMS) system. This system is part of the

Geographic Information System (GIS)-based project to improve technical and urban planning management. It also facilitates staff to manage urgent maintenance requests systematically and transparently with high accountability and efficiency. In addition, it promotes potential of its internal management. Both of them are counted as successful organizations in implementing digital local governance policy to promote innovative public services. Therefore, factors affecting the achievement of local administrative should be analyzed.

Objective

This research aims to analyze the factors influencing the achievement of digital local governance development of Pak Kred city municipality in Nonthaburi Province.

LITERATURE REVIEW

1) Concept of Digital Transformation

Digital transformation refers to digital technology employed to support both internal and external organization. It should be initiated from top-level management, or top executives support and inspire their team members to adopt new mindsets to drive organizational change (National Science and Technology Development Agency, 2019). However, transforming to digital environment is a significant formation of operations, which is considerably complex, so each organization should assign roles and responsibilities clearly and properly. The key components of digital transformation for organizations can be categorized into four areas: 1) organizations' strategic business plan and formulation driven by digital technology; 2) organizational adaptation to digital-centric operations to strengthen the organization's structure and capabilities, 3) Identifying digital-ready products and adopting new business models through technological innovation; 4) driving mechanisms such as personnel, data and analytics, technology, and ecosystems for digital transformation (Boston Consulting Group, as cited in Numnonda, 2016).

2) Concept of Public Sector Innovation

This concept is crucial for both the government and the public today because it can be useful for country development and solving economic, social, and environmental problems. "Innovation" refers to new product development, or new (good and service) improvement, new processes, new marketing, new strategy in running business, workplaces or general organizational settings (The Global Innovation Index 2012, 2012). Rogers (2003) defines "innovation" as an idea, method, or object that is considered as new by other people or organizations that adopt it. Innovation has three main characteristics: new to organization, practical and valuable for organization, and beneficial to economy and society (Wutthirong, 2020; Baranskaitė & Labanauskaitė, 2020). For "public sector innovation," it refers to the development, creation, and application of new ideas, methods, or policies aimed at transforming government operations and improving public service provided (Walker, 2008). This study focuses on public sector innovation, including service innovation, service delivery innovation, and administrative and organizational innovation (Windrum, 2008).

3) Concept of Factors Influencing Innovation Creation

A study by Osborne and Plastrik (2000) on innovation in nonprofit organizations and small public sector organizations reports that the innovation creation is influenced by top management supports, public participation, experimentation, sufficient resources, learning to accept change, risk management, and evaluation. Regarding the study of factors influencing public sector innovation in Thailand, significant research by Suwanmala and others (2005), Puangngam (2015), Sangthong (2019), Mahaphon and Kalayanamit (2021), and Krueathep (2018) conclude that there are three factors influencing innovation in local government organizations. (1) External factors and community context consist of government policies, perception of issues, local people's opportunities and needs, socio-economic and environmental characteristics of the area, and community capital. (2) Internal organizational

factors consist of policies and strategies on innovation, leadership, results-oriented management, available resources (e.g., budgets), applying technology, innovation-enabling environments, and learning culture. (3) Partnerships and participation from other sectors include public, private, educational institutions, and local communities.

Conceptual Framework

Based on relevant concepts, theories, and research reviewed in the literature section, the conceptual framework used to analyze the factors influencing the achievement of digital local governance development of Pak Kred city municipality in Nonthaburi Province was developed as presented in Figure 1 below.

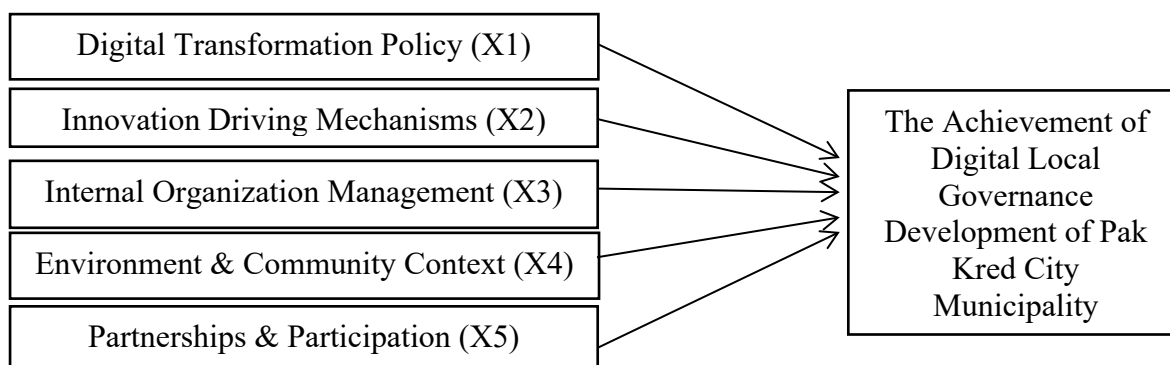


Figure 1 Conceptual Framework

RESEARCH METHODOLOGY

This study employs a quantitative research approach. The population was 15,942 peoples accessing the municipality s' e-service system. A sample size of 400 respondents was determined using Yamane's formula (1967) at a 95% confidence level together with using Multi-stage sampling. The research tool for data collection was a structured questionnaire developed based on theories and concepts from a review of relevant literature. The questionnaire is divided into four sections: 1) general information; 2) factors influencing the achievement of digital local governance development; 3) outcomes of achievement of digital local governance development utilizing a five-point Likert scale (5 = highest, 4 = high, 3 = moderate, 2 = low, 1 = lowest); 4) problems and suggestions in an open-ended questionnaire format. The questionnaire was validated for content validity using the Item Objective Congruence (IOC) technique. The accuracy and relevance of the items were evaluated by five experts, resulting in an IOC score ranging from 0.66 to 1.00, which exceeds the acceptable threshold of 0.5 for all items. The reliability of the tool was tested with 30 municipal employees in the Rangsit City Municipality in Pathum Thani Province using Cronbach's alpha, yielding a coefficient of 0.980, indicating high reliability. Data analysis was conducted using statistical software for stepwise multiple regression analysis with a confidence level of 95%.

Research Findings

According to the objective of this study, data analysis was carried out to examine the accuracy by considering conditions and terms regarding regression analysis as a primary step. First, independence of residuals was tested using the Durbin-Watson statistic. The result of this analysis showed the Durbin-Watson value of 1.829. This result is acceptable because the acceptable Durbin-Watson should range between 1.50 and 2.50 as suggested by Durbin-Watson (1951). Second, the relationship among independent variables was assessed to ensure no multicollinearity. The threshold values for tolerance and Variance Inflation Factor (VIF) were applied. Tolerance must exceed 0.10, and VIF should not exceed 10 (Tirakanant, 2012). From the multicollinearity assessment, the tolerance values for the studied factors ranged between 0.209 and 0.258 while the VIF values ranged between 3.889 and 4.885. These results

indicate that none of the predictive variables exhibited multicollinearity, satisfying the assumptions required for regression analysis. The data analysis is presented in Table 1 below.

Table 1 Analysis of factors affecting the achievement of digital local governance development of Pak Kred city municipality.

Factors Studied	Results				
	b	St. Error	β	t	Sig.
(Constant)	0.319	0.094	-	3.400	0.001*
Internal Organization Management (X3)	0.240	0.336	0.283	6.709	0.000*
Partnerships and Participation (X5)	0.239	0.046	0.237	5.222	0.000*
Innovation Driving Mechanisms (X2)	0.236	0.042	0.204	4.899	0.000*
Digital Transformation Policy (X1)	0.164	0.045	0.172	3.624	0.000*
Environment & Community Context (X4)	0.092	0.042	0.092	2.195	0.029*
R = 0.903, R ² = 0.816, Adjusted R Square = 0.814, F = 350.06					
*P<.05					

From Table 1, the results of the regression analysis reveal five factors significantly affecting the achievement of digital local governance development of Pak Kred city municipality in Nonthaburi Province. These factors are found to have statistical significance at the .05 level. The factors and their respective predictive weights (β) are as follows: 1) Internal Organization Management (X3) ($\beta = 0.283$), 2) Partnerships & Participation (X5) ($\beta = 0.237$), 3) Innovation Driving Mechanisms (X2) ($\beta = 0.204$), 4) Digital Transformation Policy (X1) ($\beta = 0.172$), and 5) Environment & Community Context (X4) ($\beta = 0.092$). The regression model has a coefficient of determination (R^2) of 0.816. It means that the five predictive variables in the model indicate 81.6% of the variance in the factors affecting the achievement of digital local governance development of Pak Kred city municipality in Nonthaburi Province. Therefore, the prediction equation for the outcome in raw score format can be written as the following equation:

$$Y = 0.319 + 0.240(X3) + 0.239(X5) + 0.236(X2) + 0.164(X1) + 0.092(X4)$$

DISCUSSION

From the study, there are five key factors found to have effects on the achievement of digital local governance development of Pak Kred city municipality in Nonthaburi Province. These factors, in order of importance, consist of 1) Internal Organization Management (X3) ($\beta = 0.283$), 2) Partnerships & Participation (X5) ($\beta = 0.237$), 3) Innovation Driving Mechanisms (X2) ($\beta = 0.204$), 4) Digital Transformation Policy (X1) ($\beta = 0.172$), and 5) Environment & Community Context (X4) ($\beta = 0.092$). It indicates that the factor of internal organization management plays an important role in promoting administrative organizations to have adequate resources for innovative development to provide services for the public. This result is consistent with the studies by Sangthong (2019) and Mahaphon and Kalayanamit (2021). They report that human resource management, budgets, and operation influence the achievement of local government administration also.

Regarding the factor of partnerships and participation, collaborative networks between local administrative organizations and other sectors, including government, private and public sectors, and academic institutions, are crucial for innovative development in local government in terms of learning new ideas and creating innovations to enhance public services. This is consistent with the study by Osborne and Plastrik (2000) reporting that community capital and network partnerships are key factors influencing innovation in public organizations. Furthermore, they also emphasize that utilization of advanced technology without public

participation and support can lead to unsuccessful digital local government. For the studied municipalities, they cooperate with the community leaders and representatives in decision-making processes to improve municipal operations through developing participatory process and supporting public activities where municipalities' mission can be sustainably collaborated. The significant internal organizational factors include leadership and motivation, and organizational policy. These factors influence innovative creation in local governance. The study by Puangngam (2015) identifies that local leadership is a key enabler for local innovation development. Similarly, Sangthong (2019) reports factors for identifying innovative strategies influence the achievement of local administrative operations.

The environment & community context is also a significant factor in fostering innovation within local government organizations. The findings of this study indicate that a positive work environment allows local administrative organizations to create and develop innovations for better public service provision. This aligns with Mahaphon and Kalayanamit's (2021) study, which found that fostering an organizational culture conducive to learning helps create a work environment within local governance in using digital technologies for transforming an organization to digital local development.

Recommendations

1) The local administrative organization should prioritize the five critical factors affecting the achievement of digital local policy implementation to enhance innovation in public services. These factors include 1) Internal Organization Management, 2) Partnerships & Participation, 3) Innovation Driving Mechanisms, 4) Digital Transformation Policy, and 5) Environment & Community Context and should prepare to leverage these factors and ensure their effective integration into planning for service innovation.

2) There should be a clear evaluation of the outcomes and impacts resulting from the development of digital local governance. This evaluation will provide essential data for revising and refining the implementation of digital transformation policies and improving the performance of local administrative organizations in driving local innovation mechanisms.

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Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

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