International Journal of Human Resource and Organization Development
IJHROD
Graduate School of Human Resource Development
National Institute of Development Administration, Thailand

Research Article

Innovation in the Thai Ministry of Agriculture and Cooperatives

Received: June 5, 2024
Revised: July 20, 2024
Accepted: October 31, 2024

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Abstract

This research investigates innovations that have been adopted or developed by government agencies to improve the efficiency of service delivery as well as to support participation by the public in activities of government agencies. Data were extracted from research projects in "Thai Public Administration Based on the Sufficiency Economy Philosophy". The triangulation approach was adopted to collect primary and secondary data from eight government departments under the Thai Ministry of Agriculture and Cooperatives. Primary data was obtained from in-depth interviews with executives and focus-group discussions among directors. A content analysis was conducted. It was found that all eight departments adopted some administrative innovations. Of the eight government departments, two departments developed technological innovations to improve their efficiency in public service delivery. All agencies need to focus more on adopting/developing innovations that lead the public to participate more in activities of government agencies.

Keywords: Administrative innovation, Technological innovation, Thai Ministry of Agriculture and Cooperatives

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Introduction

"Innovation" has a number of definitions. It is derived from the Latin word "novus", which means "new" (Springman, 2011). Therefore, creating something new is the goal of innovation. However, Springman (2011) points out that the word "new" does not mean only value creation from the beginning but includes value creation that comes after the issue of business growth is considered. The definition of innovation can fall under one of three main dimensions. The first dimension is *novelty* (newness) - a product, service, or process that is an improvement over an original or something already developed (Betje, 1998; Office of the Council of State, 2009; European Parliament Research Service, 2016; Schilling, 2008; Tushman & Nadler, 1986). The second dimension is *economic benefit* - an innovation that creates added value through the development of new things. The benefits that arise may or may not be measured directly in monetary terms (Office of the Council of State, 2009; Department of Trade and Industry (DTI), 2004; European Parliament Research Service, 2016; Smits, 2002; Utterback, 2004). The third dimension is *use of knowledge and creativity* – an innovation that comes from the use of knowledge and creativity as the base of new development and not caused by plagiarism or repetition (Office of the Council of State, 2009; Department of Trade and Industry (DTI), 2004; Herkema, 2003; Lemon & Sahota, 2003; Schilling, 2008). The meaning of the foregoing definitions is similar to "innovation" as defined in the Royal Decree establishing the National Innovation Agency (Public Organization) (2009) which states that innovation is the production, learning, and utilization of new ideas for economic and social benefits, including the creation of new products, services, production processes, technology improvement, technology diffusion, and the use of technology for economic and social benefits.

Rapid changes in global society; especially environmental, economic and social changes; affect the way people live in society. These changes, and the challenges they create, also reflect the complexity and uncertainty inherent in each society. These challenges become issues that require different solutions that meet the needs of different societies with different beliefs, lifestyles, and development approaches. For this reason, innovation has become one of the areas of focus for organizations. For private sector organizations, innovation is seen as the key to driving the organization forward. Innovation is a crucial factor that allows organizations to offer their products and services to a wider group of consumers (Cankar & Petkovsek, 2013). Ortiz-Villajos and Sotoca (2018) also point out the importance of innovation in terms of its influence on the survival of private sector organizations. Innovation in all sectors relies on the effective actions of public sector organizations (United Nations Economic Commission for Europe

(UNECE), 2017). As a result, innovation has come to be the focus of attention in government organizations and can be supported in various ways to meet the needs of all sectors.

In Thailand, innovation is considered to be a necessary component of the Digital Government Development Agency (Public Organization), especially in an era when government organizations are facing technological changes that result in their operations being driven through technology and digitalization. Innovation is therefore an important function of government organizations to drive service delivery and can be seen as a "tool" for management in all sectors. It is, therefore, a key component in various organizations to support effective operation.

This research paper analyzes data extracted from research projects under the title "Thai Public Administration Based on the Sufficiency Economy Philosophy". It focuses on the adoption or development of innovations by government agencies that aim to improve efficiency of service delivery and support public participation in agency activities.

Literature review

The development of the Thai bureaucracy

Siripragob (2022) proposes the following three key concepts that can be used to analyze the development of the Thai bureaucracy. They are: *1) Old Public Management (OPM)* was an early concept of public management (from 1887 to present) that viewed the bureaucracy with administrative regulation as most effective in the provision of public services, *2) New Public Management (NPM)* (from 1992 to present) proposes a model in which government agencies adopt administrative flexibility instead of strict regulations, such as restructuring departments to be smaller and separate and replacing automatic life-time employment with contract employment; *3) New Public Service (NPS)* (from 2000 to present) is a concept that complements OPM in terms of principles and processes in formulating public policy and public services by giving priority to the public as receivers of public services. In this model, the public have the right and obligation to participate in government activities together with government officials, who sometimes will step back to role as facilitators.

Most people see Thai bureaucracy as a large system, with complex work that makes it difficult to estimate the time needed to complete any particular project or activity. This view is a consequence of OPM management practices that have been deeply embedded for a long time. However, the Thai bureaucracy has adopted the NPM model similar to that of Britain and United States since the 2000s, some practices are clearly defining the duration of any operation, preparation of a guide for the public, and establishment of shared service centers and permit

centers; all of which reflect a customer-driven and results-oriented government (Osborne & Gaebler, 1992; Siripragob, 2022). Efforts at the policy level to apply the values of NPM public management to the Thai state from 1980 until 1997 contributed to the Thai economic crisis and reflected the inability to adapt to changes both inside and outside the country. The Thai economic crisis led to a period of political change that has pushed the Thai government to adopt values from the NPS public sector management approach and combine it with the existing NPM in order to increase the involvement of more people and other sectors of society in the management of the public interest. This is reflected in the provisions of the Constitution of the Kingdom of Thailand B.E. 2540 and B.E. 2550 (2007), as well as the management of the government during that period. In addition, the Thai Bureaucratic Development Strategy 2008 - 2012 clearly defines the values of the NPM concept (Strategic Issue 1: Keeping up with changes, and Strategy Issue 3: Adeptness), and NPS (Strategic Issue 2: Participation, and Strategy Issue 4: Righteousness) is also supplemented (Office of the Public Sector Development Commission, 2008). In terms of adjusting the government's role, mission and budget; the value of NPS public management added to the dimension of allowing the people to be involved in government activities. Decentralization allows localities to make budget decisions that meet the needs of the area in order to achieve development and problem solving on the spot. It also aims to strengthen local democracy (Siripragob, 2022).

Innovation in Thai public services

Office of the Public Sector Development Commission (2017) has defined innovation in public sector management as "New ways and models of organizational development, work process, and service delivery, which is a result of creating, developing, enhancing, extending, or applying knowledge and practices that support the development of efficiency and effectiveness in the performance of government agencies. The aim of innovation is to create tangible benefits for the people." This definition is consistent with that of Apolitical (2019) and Australian National Audit Office (2009). They define public sector innovation as: "The process of implementing new methods to improve efficiency, effectiveness and create value for civil society, which is mainly focused on improving operational processes and providing services to the people." From the above definition, the aim of government innovation includes three issues: 1) To increase efficiency and effectiveness for government organizations; 2) To develop or improve the public service system; and 3) To deliver products or services that are mainly targeted at the people of the country. In addition, public sector innovation is not only of one type, but is distributed in several categories; e.g. services innovation, services delivery innovation,

administrative innovation, systematic innovation (Office of the Public Sector Development Commission, 2018).

Thailand's *National Innovation System* (NIS) is designed to support innovation in eligible private companies engaged in research and development which strive to implement technological innovation in their product and process (Thawesaengskulthai et al., 2024). However, Prachomrat (2015) pointed out that there was a shortcoming in the adoption of the NIS policy as it continued to follow the model that promotes a flow of knowledge from research. The plan for development of science, technology and innovation is mostly for the public sector, not for building up competitive firms. In Thailand, NIS is seen as a tool to analyze the overall scope of science and technology development at the national level and to identify the problems facing the country. This alone is not enough to stimulate a country's innovation process. Other research has stated that although the Thai government has implemented various policies and programs to promote entrepreneurship and technological development, the support primarily revolves around financial assistance and does not give sufficient emphasis to comprehensive support which includes an entrepreneurial mindset, culture, and flexible regulations (StartupBlink, 2022; Wonglimpiyarat, 2016). To foster sustained success in Thailand's innovation economy, Thawesaengskulthai et al. (2024) propose that a holistic understanding of science, technology, innovation, and creativity is required. Besides revisiting regulations and laws to eliminate constraints and introduce incentives for innovative business practices, other measures and government services to facilitate entrepreneurial innovation are also essential.

Jenjarrussakul (2017) found that the classification of innovations from 2012 onwards is more diverse than previous and depended on the goals and activities that the innovation relates to. Also, later innovations tend to have a value perspective that is both tangible and intangible. The use of technology, as well as the type of business, influenced the type of innovation. Classification by area of impact, a common classification approach that is used in research and innovation management (Auerjirapongpan et al., 2010), is analyzed in this research. There are two major forms of innovation in this classification: *technological innovation, and administrative innovation.* Technological innovation is an innovation based on development derived from technology, and administrative innovation is that which focuses on inventing and changing the way we approach organizational processes, as well as making the provision of services of an organization to be more efficient and economically beneficial (Chesbrough, 2006; Tidd et al., 2001).

Innovation in the Context of the Thai Ministry of Agriculture and Cooperatives

One of the five strategies of the Ministry of Agriculture and Cooperatives under the 5-year action plan (2023-2027) is "Agricultural Technology Strategy 4.0". This strategy aims for the development of the agricultural sector by using technology and innovation throughout the supply-value chain, from production, processing to marketing. The development guidelines include developing a learning center to increase the efficiency of agricultural production, developing the Center for Agricultural Technology and Innovation (AIC) as a center for the collection of knowledge in agricultural technology, and developing farmers to be smart farmers. In addition, the guidelines also cover the promotion of farmer institutions and for community agribusiness operators to be agricultural service providers to enhance agricultural services and be a channel of comprehensive access to modern agricultural technology and innovation (Ministry of Agriculture and Cooperatives, 2021).

The Office of the Permanent Secretary of the Ministry of Agriculture and Cooperatives (2021) has driven key policies such as production-led marketing, development of agricultural databases (Big data), development of production quality, and standards of agricultural products. In addition, the office has focused on driving modern agriculture according to the Thailand 4.0 policy, which is the application of technology, innovation, and wisdom in the development of agricultural products to create added value and create quality and standards of agricultural products. To serve farmers who gather knowledge in agricultural technology and innovation, the Ministry of Agriculture and Cooperatives established the "Agritech and Innovation Center (AIC)". At present, the Ministry of Agriculture and Cooperatives has collaborated with educational institutions to establish AIC centers in 69 educational institutions in 77 provinces (AIC *Center Structure* by Agritech and Innovation Center: AIC, 2022).

The AIC Center guidelines focus on promoting agricultural technology, inventions, and innovations in various forms by using existing databases to combine local wisdom and technology. The AIC Center cooperates with agricultural technicians and agricultural philosophers who are model farmers and use both local wisdom and modern technology. In addition, it also focuses on management of large plots, attracting young smart farmer groups to participate - both community enterprises and cooperative groups - enhancing knowledge in both smart agriculture in e-commerce, story creation and packaging in agribusiness, as well as various measures and regulations related to agriculture. It aims to provide farmers with knowledge as well as a good network so that they can to step into the sustainable agricultural 4.0 era (Office of the Permanent Secretary of the Ministry of Agriculture and Cooperatives, 2021).

In addition to the establishment of the AIC Center, there are guidelines for the development of information technology. The Ministry of Agriculture and Cooperatives has prepared the Digital Action Plan of the Ministry of Agriculture and Cooperatives 2020-2022, which aims to serve as a framework for the development of digital technology in the Ministry of Agriculture and Cooperatives. Such development aims to be in parallel with agricultural development and in line with the National Plan on Digital Development for economy and society.

Research Methodology

Data were extracted from research projects titled "Thai Public Administration Based on the Sufficiency Economy Philosophy" in which triangulation of observers and sources of data were adopted to collect primary and secondary data (Bryman, 2016, p.386). Consequently, the authors collected data using different methods: an in-depth interview of one executive, focus group discussions with 5-8 directors from each department under the Ministry of Agriculture and Cooperatives (MOAC), and reviews of archival documents and web-based resources. Eight departments were purposely selected so that all four clusters of operation in the ministry were covered. While collecting primary data from in-depth interviews and focus group discussions, at least three observers attended. Note-taking and tape-recording, where permitted, were employed to record observations and responses to interview questions. Probes and document analysis were used to explore interview answers in more depth (Hussey & Hussey, 1997). The content analysis was conducted in phases (Duriau et al., 2007). Firstly, the recordings were transcribed and coded. After that, an analysis of content and interpretation were conducted.

Results

The content analysis reveals important approaches and examples of innovation adoption/development in those eight sample departments. In addition, types of innovation classified by area of impact, i.e., *Administrative Innovation and Technological Innovation,* are also specified. Details are shown in table 1.

Table 1. Analysis of approaches and examples of innovation adoption/development in sample departments

Department	Innovation Approach	Examples of innovation projects/activities	Types of innovations
Department 1	- Develop personnel to be "Smart Officers"; motivate personnel to be virtuous and talented; organize contests for	- *The Smart Officer Program* focuses on personnel development and management. It motivates personnel to be virtuous and talented people.	Administrative Innovation

Department	Innovation Approach	Examples of innovation projects/activities	Types of innovations
	innovative, creative projects.	- *The Best Officer Show* provided an opportunity for personnel within the Office, both central and regional, to present their work and innovative abilities. - Contest for innovation to improve work at the individual level. Activities were in line with the action plan to strengthen the well-being and engagement of personnel.	
	- Create works that reflect the innovative development of personnel.	- LINE official Moac Library adds channels to serve the library of the Ministry of Agriculture and Cooperatives.	Administrative Innovation
Department 2	- Enhance operations by adopting modern technology.	- *LDD Zoning Application* consists of 13 economic crop suitability information layers. If there is a change in land use, the staff can edit and update the information through the online system conveniently and quickly. For example: - Application *Clay Clip* is an application to transfer knowledge and technology in land development. It is a video clip showing successful farmers and aims to transfer knowledge in the management of the land. - Application *Press to see & know the soil* is an application providing information on soil and land use groups, soil management guidelines, and problems relating to suitable soil and plants.	Administrative Innovation
	- State Award Submission Application *Online Soil* of the Center for Information and Communication Technology	- The agency won the State Excellence Award related to service development for its work *Development of Soil Information and Land Use Service System for Online Soil*, by the Center for Information and Communication Technology	Administrative Innovation

Department	Innovation Approach	Examples of innovation projects/activities	Types of innovations
Department 3	- Promote research studies to improve operational efficiency and create innovative results.	- Development of 'water demand maps' in the form of a geospatial host geographic information system to support royal rain operations. The main data are areas showing water needs of plants and drought declared areas. - *Water Demand Map* is a tool to educate farmers on spatial water needs in the form of a mobile application through the mechanism of Royal Rain Volunteers across the country so that farmers can use various data sets to plan crops in each season.	Administrative Innovation
	- Creating works that reflect the innovative development of personnel.	- Develop the *Water Demand Mapping* technology for Royal Rain Operation which received the State Excellence Award in Service Innovation Category	Administrative Innovation
Department 4	- Application of new technologies to serve the public.	- Application Plants for U: *Know the truth about plants with the Department of Agriculture* was disseminated to farmers and interested citizens. - *DOA* Research disseminates research and development data from Department of Agriculture researchers. Full documents can be downloaded as needed.	Administrative Innovation
	- Provide opportunities for personnel to work with foreign countries to provide new ways and approaches to work.	- Collaborating with representatives of Japan and FAO in standardizing international movement of fresh mango fruit. This activity considers the conditions for import-export of fresh mango fruits of member states. - Jointly establish phytosanitary in seed production certification to promote the Seed Hub policy of the Ministry of Agriculture and Cooperatives.	Technological Innovation

Department	Innovation Approach	Examples of innovation projects/activities	Types of innovations
	- Create innovative technologies and applications to assist in the work and dissemination of news of the Department.	- *Plants For U* application by Department of Agriculture Knowledge Management Working Group. *Knowing the truth about plants with the Department of Agriculture* disseminates knowledge on crop production to farmers and interested parties to help increase production efficiency, yield quality, and reduce production costs. - State Excellence Award 2021, Government Service Branch Outstanding Level Service Innovation Category from the work titled "Pest Nematode Inspection Innovation with Supersonic Frequency (Ultrasonic) Technique for Import and Export Plant Inspection Management".	Administrative Innovation
Department 5	- Serve the public by adopting service system technology to increase operational efficiency.	- *SSMAP* system: The system provides map information to Department staff for use as a map data warehouse and map data for processing. Analyze data and prepare agricultural development plans and projects.	Administrative Innovation
	- Develop operations using various modern technologies.	- *DOAE FarmerRegist system* is a guide to farmer registration and enables authorities to find out how to register convenient and easy operation of programs and workflows. - *DOAE Market* is a market management system that helps to collect market information. It also helps calculate the total sales of each location.	Administrative Innovation
Department 6	- Improve operational efficiency and public service delivery.	- *SWOC DOC*: Improves the medium-sized reservoir water management decision support system. - *SWOC RF*: Improves the medium - sized reservoir water management decision support system.	Administrative Innovation

Department	Innovation Approach	Examples of innovation projects/activities	Types of innovations
		- *SWOC Monitor* is an application that notifies, reports and presents information on the Disaster Situation of rainwater, large and medium-sized reservoirs, runoff, and water quality.	
	Develop applications to help in operations.	- Application *SWOC PR* is a participatory water situation reporting application for reporting the water situation from monitoring stations, officials, and the public.	Technological Innovation
	- Works that reflect creativity - Performance that reflects the innovative development of personnel	- State Excellence Award for Government Service in the category of data integration for services; namely the work of the data integration system for water management among many agencies. - State Excellence Award for Government Service innovation which related to water hyacinth control agents in waterways. The department conducted a research study to find out how to carry out hyacinth removal control using biological herbicides. Bio herbicide is used to effectively control hyacinth infestations in irrigated areas. It is cost-effective and safe for the environment.	Administrative Innovation Technological Innovation
Department 7	- Innovation and digital technology are used to develop the services of the Department.	- Comprehensive cooperative accounting system program. - In-depth cooperative audit system program. - The Smart Auditor application is a tool to facilitate the transfer of knowledge about the development of farmer institutions and the promotion and development of accounting capacity to farmers.	Administrative Innovation
	- Innovation Award for Knowledge Sharing of the agency	- Innovation Award for Knowledge Sharing of the agency • Operational Facilitation category Award.	Administrative Innovation

Department	Innovation Approach	Examples of innovation projects/activities	Types of innovations
		• Enhancement of operational efficiency and efficiency categories. Awards include financial transaction linkage system for cooperatives, cooperative monitoring system using Rangsit program and E-Learning.	
Department 8	- Improve the efficiency of public services by adopting the TAS2GO application. - Improve the operation of staff by implementing the E-Service system to be able to work more conveniently and quickly.	- Create the TAS2GO application to collect agricultural product standard information and disseminate it through online media and access agricultural standards more conveniently, quickly and efficiently. - E-Service system such as standard certificate search service. Agricultural product standard search service as a tool to help staff to operate more conveniently and quickly.	Administrative Innovation
	- New marketing through IT communication tools such as the online sale of agricultural products on a fruit/tree reservation basis	- New market management through IT communication tools such as enabling online sale of agricultural products, including traceable agricultural products, and providing online marketing and delivery services.	Administrative Innovation
	- Received the State Excellence Award in Participatory Public Administration	- Receiving the State Excellence Award for Participatory Public Administration in the category of Open Mind to the People. The process of working with the public and listening to opinions leads to participatory work and gives rise to a creative working mindset that increases the ability to cope with challenges that arise.	Administrative Innovation

Table 1 shows that each department has adopted 2-3 administrative innovations to improve their operations and efficiency of public services. Of the eight government departments, two departments develop 1-2 technological innovations to provide new ways to work. Besides adopting/developing innovations to improve operational efficiency and public

service delivery, some innovation approaches reflect the implementation of digital technology systems as well as the transition to a digital society by government agencies. In addition, those innovations develop public services efficiently and lead to participatory work among stakeholders.

Discussion and Recommendations

Adaptation to support the development of Thailand 4.0 requires a restructuring of the economy towards an innovation-driven economy by shifting from commodity production to innovative products, shifting from driving the country by industry to being driven by technology, creativity, and innovation (Office of the Public Sector Development Commission, 2017; Maesincee, 2016). It can be seen that the digital services of the sample agencies under the Ministry of Agriculture and Cooperatives have become more and more common since 2016, which is the period from the early stages of pushing the country to become Thailand. 4.0 (Bureau of Personnel System Research and Development, Office of the Civil Service Commission, 2017). These digital services focus on the provision of services through electronic service systems, or e-Service systems. However, the transformation into a digital society has become even more evident in the aftermath of the coronavirus (COVID-19) pandemic which was a catalyst for change on an even more expansive scale. Changes included changes in the structure of public administration, the style of interaction and collaboration of personnel and the adaptation of personnel within the unit who are familiar with working through digital technology. In the overall transformation of public administration into operations through digital technology, there is an emphasis on operations that focus on providing services according to the mission of the agency through an electronic system which can provide access to information and services more quickly for internal and external stakeholders, e.g., application for facilitation of news and services by the Land Department, application for Peacock Seal Certification by the Queen Sirikit Department of Sericulture, application ALLRice by the Rice Department, etc. This research found that innovations in sample departments innovations in our findings were highlighted in two points: ease of use and accessibility. Since most services are offered in the form of mobile applications, website applications, or online communication channels such as LINE application, then the issues presented by the contributors will be considered collectively under a functional perspective (ease of use/usability) (Balushi & Ali, 2016). This is one of the perspectives that the government must focus on when providing services through electronic systems. There are other perspectives of the electronic service system that the government should emphasize in order to improve e-service quality. These

include reliability, responsiveness, website design/content, efficiency, and security/privacy (Balushi, 2021; Balushi & Ali, 2016).

Due to critical challenges; including disruptive technology, the COVID pandemic, and climate change; innovation is regarded as an important means for the public sector to improve their effectiveness, efficiency, and respond to expectations of multiple stakeholders (Molloy et al., 2024). Innovation in Thailand's public sector is being implemented under the 20-year National Strategy and the 13th Economic and Social Development Plan (2023-2027), which focuses on bringing creativity and innovation development to drive new economic value-added innovations through the formulation of the National Research Agenda (Office of the National Economic and Social Development Board, Office of the Prime Minister, 2023). Chen et al. (2020), after reviewing the existing typologies of public sector innovation, concluded that existing typologies could not capture the nature of the public sector context. Existing typologies of public sector innovation failed to reflect the significance of the New Public Governance paradigm which places a greater emphasis on public value goals with an external focus. Similarly, Suchitwarasan et al. (2023) proposed that public sector organizations should consider focusing on external orientation in an administrative context where the governance paradigm shifts towards post-NPM reform. This research finding is consistent with Suchitwarasan et al. (2023) which revealed that Thai public services employed innovation to strengthen their administrative capacity. Therefore, Thai government agencies should focus more on those innovations that lead to participatory work among stakeholders, e.g., a new platform to enable co-creation or co-production between government agencies and citizens to achieve common goals. This will support the value of the New Public Service concept by giving priority to the citizens who have the right and obligation to participate in activities together with government officials.

Limitation and Future Research

Other data collection techniques could also be used, such as observing officers working at their offices or time series data. Finally, a study using the same method and the same sets of questions could be conducted to investigate innovation adoption/development in other ministries whose missions are different from those studied.

Acknowledgements: The authors gratefully acknowledge the financial support provided by the National Research Council of Thailand.

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