Factors Affecting Quality of Residual Waste Management in Community

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ABSTRACT

Abstract— The purpose of this study was to study the level of community participation, process innovation service innovation and the level of quality of residual waste management in the community of Dusit district in Bangkok. Including there are to study the participation of the community process innovation service innovation affecting the quality of residual waste management in the community of Dusit district in Bangkok. The research approach uses quantitative research. The sample group used in this research was 240 people in the community in Dusit District, Bangkok, selected from the population by a simple random sampling method. The statistics used in the analysis were descriptive analysis and multiple regression analysis. The results showed that the level of community participation, process innovation, service innovation and quality of waste management, were a high level in all factors. with process innovation being the most average, followed by service innovation, community participation and quality of residual waste management, respectively. The results of the analysis of the influence of community participation process innovation service innovation that affect the quality of residual waste management found that the community participation, process innovation and service innovation affecting the quality of residual waste management with statistically significant at F = 66.462. All variables could explain the variability of residual waste management quality 52.13%.

Keywords— Community participation, Process innovation, Residual waste management, Service innovation

INTRODUCTION

In today's world, the direction of energy policy to support changes in people's energy consumption behavior in the future. It aims to achieve real results in practice and has a clear goal of what will happen when Thailand enters the Energy 4.0 era. Energy evolution before reaching the Energy 4.0 era. Energy 1.0 era is the discovery of fire. Later Energy 2.0 era is the discovery of minerals such as coal that can be used to ignite fire for a longer time for agriculture and small industries. The Energy3.0 era, which is the current era, is the era where we discovered natural gas oil for use in large industries. The Energy 4.0 era, which is an important transition period in Thailand, is where energy is located based on innovation, focusing on clean energy and maximum efficiency (Ratanakarn, 2020).

Waste is a form of renewable energy that is used as raw material for electricity and thermal power generation. In 2017, the total amount of solid waste across the country was 27.40 million tons, an increase from 27.06 million in 2016. tons, representing 1.26% or 120,000 tons, while the rate of solid waste per person decreased from 1.14 kg / person / day. In 2017, the use of solid waste increased from 5.80 million tons to 8.52 million tons. More than half of the waste is not disposed of properly. Dumping them in garbage dumps or dumping them in places causes environmental problems. There are foul odors and germs, and sometimes there is also air pollution caused by the combustion of garbage piles and waste disposal by conventional combustion processes with smoke floating in the atmosphere. These wastes can be recycled or can be used as energy which leads to fixing overflowing waste in the city and also reduce the problem environment as well.

The National Council for Peace and Order (NCPO) has put forward solving the garbage problem as a national agenda. Due to the large amount of solid waste with only some parts being improperly collected and disposed of, causing a large amount of accumulated waste. Therefore, renewable energy today is reaching an important turning point in order to become. The future is an era that focuses on stability, wealth and sustainability, technology and other innovations. Innovation and technology are the basis for development towards Renewable Energy 4.0. Therefore, the use of technology in waste management is important to provide energy waste to restore sustainable environment, restore the 3R principle which are reduce, reuse and recycle (Ratanakan, 2020).

The current concept of waste management is to minimize waste and treat the rest with effective technology. In the area of Dusit Bangkok have economic growth and has a large latent population causing the amount of waste to increase rapidly Current waste management unable to support the rapidly increasing amount of waste, resulting in the problem of odor pollution, which is a carrier of communicable diseases and affects public health. Therefore, it is necessary for people to take part in solid waste management, encouraging people to have the correct knowledge and understanding of solid waste management. This will reduce the amount of solid waste that must be disposed of to a minimum. Solid waste can be used for both reuse and reuse. People can reduce the amount of solid waste, resulting in a good environment. Public health is in good health. The landscape is beautiful as well as benefiting from waste separation sold to increase family income and recycling This makes it possible to save costs as well. People are aware of the problems and solutions for solving solid waste, recycling waste for new uses, as well as supporting people's participation in reducing and separating waste concretely.

From the problems and trends related to waste management operations mentioned above. Therefore, the researcher is interested in studying community participation, process innovation, service innovation affecting the quality of residual waste management in the community of Dusit district, Bangkok. The results of the study will serve as a guideline for effective community management. As a result, effective waste management in the community which will have a positive effect on the quality of life of the people in the future.

LITERATURE REVIEWS

Public participation

Public participation is a participatory nature of the development process from the beginning of the project to the end of the project, i.e. joint discovery of problems, planning, decision-making, mobilization of local resources and technology, management, monitoring, and evaluation as well as receive the benefits arising from the project. Such development projects must be consistent with the way of life and culture of the community. It can be concluded that community participation means that people have the opportunity to participate in initiatives, joint decisions, planning activities related to the management and control of the use of resources and technology in local administration. To manage, monitor, evaluate and receive the benefits arising from such development projects must be consistent with the way of life and culture of the community. Participation can be one or all of the steps. Participating citizens may be individuals, groups or organizations of consensus, with a shared responsibility to carry out developments and changes in the desired direction through groups or organizations. project completion (Parichart Walaisathien et al., 2000).

Before the participant procession persuades anyone or any agency to participate in any decision-making process. It is imperative to ensure that those individuals are given the opportunity to participate sufficiently as well as having valuable opportunities for opinions, arguments and discussions where the outcome of their participation must be useful and must be integrated in the final decision appropriately. There are 3 steps in the process of creating a public participation process as follows (Chomphan, 2012).

Step 1 Decision Analysis: This step is especially important in deciding who needs to be on the planning team. This is because each stage of planning may have different stakeholders added to each phase which, if not complete, it can cause problems. The key elements of all engagement are defined of the participation process. Factors that will affect the confidence and transparency of the process and the timetable for the activities of the participation process, including an analysis of whether participation is important to this decision-making process. Whether or not it is necessary for other reasons, the conditions for the decision to proceed with the participation of the people.

Step 2 Process Planning: This step involves defining the engagement activities and techniques, in particular analyzing the engagement techniques that are most appropriate to apply at each step of the participation process in order to achieve the engagement objectives, integrity and linkage between engagement activities and decision-making processes, including the determination of stakeholders or those affected by that decision, andthe venue of the various activities.

Step 3 Implementation of the plan: The final step involves the implementation of all planned plans, participation activities and the evaluation of participation activities and the effective use of the information obtained from the participation process activities.

In conclusion, the participation of the people is something that humans have created together in various forms of community management. It is the application of the concept of local management in all aspects to improve the quality of life and livelihood of people to live together in peace. However, it is caused by the fact that people of all groups, genders, and ages are involved in setting rules of living together, creative activities together, take care and benefit from the resources available in the community together.

Process innovation

Process innovation is an essential part of the business process. It is like the heart of a business process that represents originality, together with the implementation of those initiatives to benefit. This innovative process is an essential part of the organization's ability to survive and thrive. The main components are (Chayamongkol, 2018)

1) Searching is exploring various environments inside and outside to detect signs of opportunity and obstacles for getting to the starting point for future changes.

2) Selecting is the decision to select the signals that are surveyed in order to apply them in the best interests of the organization. Selection needs to be consistent with the organization's strategy.

3) Implementation is the conversion of potential signals into innovation and bringing them to market both inside and outside the organization. As a result of the implementation of 4 important steps: (1) Acquiring is the process of applying various body of knowledge to create innovations such as creating new things from research and development processes, doing market research, obtaining knowledge from other sources through technology transfer or joint research in the affiliate. (2) Executing is the implementation of such projects under conditions of various uncertainties and requiring problem solving skills. (3) Presentation (Launching) is to bring innovations to the market through systematic management so that innovation can be accepted by the market, especially in the early stages of bringing to market. (4) Sustaining is to maintain market acceptance status continuously, continue and last as long as possible. At the same time, such innovations may need to be brought back to make improvements, revise ideas, or start from scratch. (re-innovation) to get innovations that have been developed to be more in line with market demand. (5) Learning is a necessity that organizations should study and learn in different stages of the innovation process to form a basic knowledge strong and can be used to develop methods for dealing with those innovative processes to have better efficiency.

Service innovation

Choosri (2014) concluded that Service innovation requires a framework to be used as the basis for the process of service innovation. The framework is a structural component or building block of service innovation that consists of 4 parts:

1) Information: Information in this context refers to the objectives or goals of the value expected from the performance of service innovations, including the issue of conditions and limitations is a problem that requires finding solutions. It may be regarded as a feature or Specification of the group of proposals that will be created.

2) Process: The process here refers to the service process on the service provider side and the process of using the service on the user's side. It is an important part of service innovation and it's a very valuable and intellectual property. Because it will be the part that comes from new ideas and considered innovative, especially in the era where the development of ICT has advanced a lot. Service innovations often have to be built on the basis of the use of information and communication technologies, especially broadband internet and portable wireless devices.

3) Technologies: To support the processes that are part of the value proposition including the linking of resources from both internal and external sources to jointly create proposals and create value requires a service system that is an ICT system. Importantly, an ICT service system is also used as a delivery system offering to customers to create value. This service system will be designed in relation to the offering and value creation process. Service system design is another important part of service innovation.

4) Environment: Environment in this context refers to the awareness of the historical data and circumstances of the service recipient that will help create the mutual value between the service provider and the service recipient is effective. It is the nature of trying to understand different contexts of consumers in order to be able to answer customer questions in a variety of contexts. It may also refer to other environments that are significant to the design of the proposal and service system leading to support for customers to create full value.

METHODS

The target population used in this research were people in community in Dusit distinct, Bangkok. The sample size was determined in the event that the population size was known, calculated using Taro Yamane's formula (Ymane, 1967), where a 5% error was determined. A sample size of 240 people was obtained and the samples were selected using a simple sampling method.

The tool used to collect data is a questionnaire which is divided into 4 parts as follows: Part 1, Demographic data consisted of 1) gender 2) age 3) educational level 4) length of stay in the community. Part 2, a questionnaire about the level of community participation, process innovation and service innovation of the community in Dusit District, Bangkok. Part 3, a questionnaire on the level of residual waste management quality of communities in Dusit District, Bangkok in 5 aspects, consisting of reduction of waste generation and waste separation at the point of origin, resting and waiting for collection, collection and transportation unloading of solid waste and waste disposal

Statistics used in data analysis, the researcher used descriptive statistics to describe the demographic characteristics such as frequency, percentage, mean and standard deviation. As well as the inferential statistical analysis was used to test research hypotheses by using Pearson correlation coefficient analysis and Multiple regression analysis.

RESULTS

Descriptive results

The results of the research concluded that demographic characteristics of the sample mostly female 56.78% were in the age range between 41 - 50 years, the most 26.69% had the highest level of education in the bachelor's degree, accounted for 55.51% and had a period of stay in the Dusit District, the period of 11-15 years, the most, accounting for 27.54%.

The level of community participation process innovation service innovation and quality of waste management, overall, it was at a high level in all factors. It was found that the respondents gave their opinions the most about process innovation, followed by service innovation, community participation, and a quality of waste management, respectively.

The results of the analysis of the community participation model process innovation service innovation affecting the quality of residual waste management in communities, Dusit District, Bangkok, it found that the predictors with the highest multiple regression coefficients were community participation (β=0.318), followed by process innovation (β=0.156) and service innovation (β= 0.121), respectively, with statistical significance at F = 66.462, and all variables could explain the variability of residual waste management quality in communities in Dusit District by 52.13%.

CONCLUSION AND FUTURE WORK

Conclusion and discussion

The results showed that community participation influenced the quality of residual waste management the most. followed by process innovation, and service innovation, respectively. This is consistent with the study of Plaikaew & Aksornphan (2019), the results indicated that the development of a solid waste management model with community participation by encouraging the community to be aware of solid waste management, provide opportunities for communities to participate in the development of solid waste management at every step. In accordance with the research of Jeamponk (2011) referred that local administrative organizations should campaign to publicize knowledge to raise awareness among communities in waste management projects as well as contribute in following ways: 1) analyze problems condition and needs on solid waste solving 2) make plans and define problem solution activities 3) make decision on using community sources for problem solving 4) follow the those plans 5) evaluate outputs 6) propose suggestions and improve working process to meet the effective goals. Including the study of Ratanakan (2020) stated that the provision of academic knowledge for the public to understand and apply in various fields: 1) Reduce the amount of solid waste production by campaigning for people

to participate in reducing the amount of waste each day, 2) Reuse by campaigning for people to use various materials, and 3) Recycling management by campaigning to separate solid waste at home, school and at the office.

Recommendations and future work

Relevant government agencies should have a body of academic knowledge to make people understand the quality of residual waste management. There should be a serious campaign on waste management to create awareness among members of the community to have the correct waste management behavior, including should be issued regulations on solid waste management and various punishment measures to those who strictly violate.

In addition, community leaders should focus on building community participation in residual waste management. There has been an urge to continue with public relations to participate in activities related to solid waste management. Community leaders should focus on implementing innovative processes to manage residual waste in the community as well as the quality of residual waste management in the community, such as using a 3R waste management model, reducing waste generation and separating waste, taking a break for hygienic waste collection garbage collection and transportation effective hygienic waste handling and proper disposal of solid waste according to environmental principles.

REFERENCES

Chayamongkol, L. (2018). *Competitive Advantage Management of Thai AirAsia*. Doctorate of Philosophy Management major. Graduate School. Siam University.

Chomphan. J. (2012). Principal analysis. "Public Participation" in "The Public Participation Handbook: Making Better Decisions through Citizen Involvement" in the Thai context. *Journal of Environmental Management* 8(1). 123-139.

Choosri. A. (2014). *Service Innovation, Social Responsibility and Word-Of-Mouth Marketing that Affects the Decision to Attend Wards in Private Hospital in Bangkok*. Independent research is part of curricular education. Master of Business Administration. Bangkok University.

Jeamponk, P. (2011). The Study of Household Behavior on Solid Waste and Wastewater Management at Bangnanglee sub-District, Amphawa District, Samut Songkram Province. Faculty of Science and Technology**.** Suan Sunandha Rajabhat University. *Research and Development Journal.* Vol. 3, 2011, pp. 4-13.

Naowawathong, P. (2008). *Sufficiency Economy Community Management Case Study: Khamplalai Village, Ban Dong Subdistrict, Ubonrat District. Khon Kaen Province.* Thesis papers from the Faculty of Social and Environmental Development; Bangkok: National Institute of Development Administration.

Phothikul, A. (2018). Community Waste Management of Saensuk Municipality, Sriracha District, Chonburi Province. *Asia-Pacific Institute of Management Sciences Department of Humanities and Social Sciences*. 7(13), 107-121.

Plaikaew, R. & Aksornphan, P. (2019). Effects of Solid Waste Management by Participation of Ban Na Sub-District Municipality Community. Ban Na Doem District Surat Thani Province. *Rajabhat Journal Surat Thani*, 5(2), 233-248.

Pollution Control Department. (2017). *Report on the Situation of Community Solid Waste Disposal Sites in Thailand*. Bangkok: Garbage and Sewage Section Bureau of Waste and Hazardous Substances Management. Pollution Control Department Ministry of Natural Resources and Environment.

Yamane, T. (1967). *Statistics, An Introductory Analysis* (2nd Ed.). New York: Harper and Row.