Factors Related to Public Participation in Water Management in the Namkon Weir Area, Nan Province

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Abstract

This research aims to investigate the relationship between 4 factors regarding public participation in water management in the Khon weir area, Nan Province. The 4 factors include: 1) demographic; gender, family status, and education; 2) economic; occupation, and net income; 3) communication; perception, and sources of information and news; and 4) motivation; occupational problems, shortage of drinking water, water for consumption and agriculture, and flooding issue. The prospect sample group used in the study includes the Namkhon Weir project area, Chiang Klang District, Nan Province, covering an area of 2,598.19 rai, with the applicable area of 1,495 rai, consisting of 3 sub-districts and 10 villages, consisting of 227 water users. The questionnaire was used for analysis using Pearson Correlation with a statistical correlation of 0.05. The result revealed that factors related to public participation in water management in the Namkon Weor, Nan Province, are demographic factors including gender and family status; economic factors including occupation and net income; and motivation factors including occupational problems, shortage of water for consumption and agriculture, and flooding issue. As for factors that are not related with a statistical correlation of 0.05, include demographic, education, and communication factors, including information reception and method of reception.

Keywords: Participation, Water Management, Farmer Water Users

Introduction

Nan Province has a total area of 12,161.4 square kilometers or 7,600,882 rai. Its general area includes the Luang Prabang Mountain Range and the Phi Pan Nam Mountain Range, granite mountains with an elevation of 600 - 1,200 meters above sea level, stretching through the entire province, accounting for approximately 40 percent of the total province's area. The Nan Province area generally contains undulating terrains with slopes of more than 30 degrees, approximately 84 percent of the province's area. The plain areas are approximately 2.69 percent and consist of 2 main river basins:

The Nan River Basin and the Yom River Basin. Nan River Basin has an area of 34,908 square kilometers, consisting of 10 sub-basins: East Yao, Pua, West Yao, Sa, Wa, Haeng, Kon, Hat, Samun, and Kaen rivers, and the main river is Nan River. With the increasing population, the demand of water for agriculture, for consumption, a demand for water to maintain the downstream ecosystem, a demand for water for industry, all have increased including flooding and drought problems while the areas encounter a high risk of repeated flooding, which are in the Nan River area of Mueang Nan District, Phu Phiang District, and Wiang Sa District.

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The Royal Irrigation Department is the main agency in developing water sources based on the capability of the river basin to be sufficient and allocate water to all water users so that to acquire water equally and fairly, including to prevent damage caused by water. The Project Management Office of the Royal Irrigation Department, therefore, considered conducting a feasibility study to improve the medium-sized irrigation project in Nan Province to increase the efficiency of the project, which is in line with the government policy in solving the problem of water shortages and flooding.

However, studying the suitability and leading to long-term solutions may require a long time for implementation, and the problem may become more severe during the implementation. Therefore, the researchers are interested in finding ways to alleviate these problems with the concepts that the effective water management of the people in the Namkon weir area with government agencies requires cooperation from all parties through the participatory process in order to achieve effectiveness and true benefits for the people and stakeholders.

This research aims to study the participation process, and factors related to public participation in water management in the Namkon weir area, Nan Province, which is one of the medium-sized irrigation projects in the province, and the upstream area of the medium-sized irrigation projects in Nan Province. If the Royal Irrigation Department, which is the main government agency, can manage water in conjunction with the local people effectively through the participation process, it will help to reduce the problem of water shortages for consumption, agriculture, and flooding and droughts for the local people. It will also help cultivate a culture of participation in water management, including the recognition of the values and benefits of preserving water and natural resources that are the origins of water sources, which will result in better living conditions for the people living around the Namkon weir project and in other areas of Nan Province as well.

Research Objectives

1. To study the relationship of factors affecting the public participation in water management of the Namkon Weir area, Nan Province
2. To develop the process of public participation in the Namkon Weir area, Nan Province

Research Benefits

1. To obtain knowledge and understanding of the factors affecting public participation in water management in the Namkon Weir area, Nan Province
2. To obtain guidelines for developing the process of public participation and water management of people in the Namkon Weir area, Nan Province, to reduce conflicts among all stakeholders

Conceptual Framework

In the study of factors related to public participation in water management in the Namkon Weir area, Nan Province, the conceptual framework of the study is demonstrated as follows:

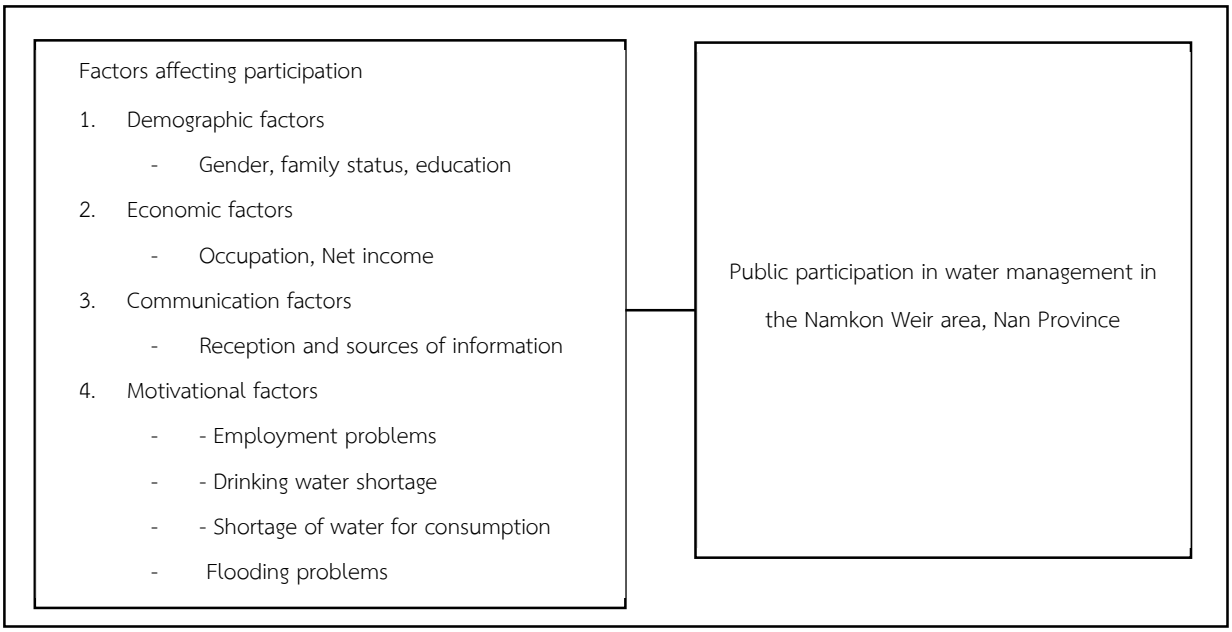

Figure 1 Conceptual framework of the study.

Research Tools

1. Demographic Samples

The sample population used for this study is households from the group of farmer water users. The researchers determined the irrigation area of the Namkon Weir Project, Chiang Klang District, Nan Province, as the area of research, which has a total area of 2,598.19 rai, with an irrigation area or applicable area of 1,495 rai, consisting of 3 sub-districts and 10 villages, namely, Chiang Klang Sub-district with a total of 3 villages including Village No. 5 Ban Sop Kon, Village No. 11 Ban Sop Kon II, and Village No. 13 Ban Sop Kon 13; Chiang Khan Sub-district with a total of 2 villages, including Village No. 3 Ban Don Taen and Village No. 4 Ban Wang Ka; and Phaya Kaew Sub-district with a total of 5 villages, including Village No. 1 Ban Nam Kha, Village No. 2 Ban Khan Na, Village No. 3 Ban Phun, Village No. 4 Ban Phaya Kaew and Village No. 7 Ban Muang. Taro Yamane's sample size determination method was used, with the deviation value set to 0.05. The result of the sample size determination resulted in 227 sample households, distributed in the study area in proportion to the number of households.

2. Research Tools

In the study of factors related to public participation in water management in the Namkon Weir area, Nan Province, the research tools used are as follows:

2. 1 Questionnaire

The questionnaire is divided into 5 sections: Section 1 is a questionnaire on demographic factors, Section 2 is a questionnaire on economic factors, Section 3 is a questionnaire on communication factors, Section 4 is a questionnaire on motivation factors, and Section 5 is a questionnaire on questions regarding public participation in water management of the respondents.

2.2 *1:50,000 map demonstrating the area of the Kon Dam project*

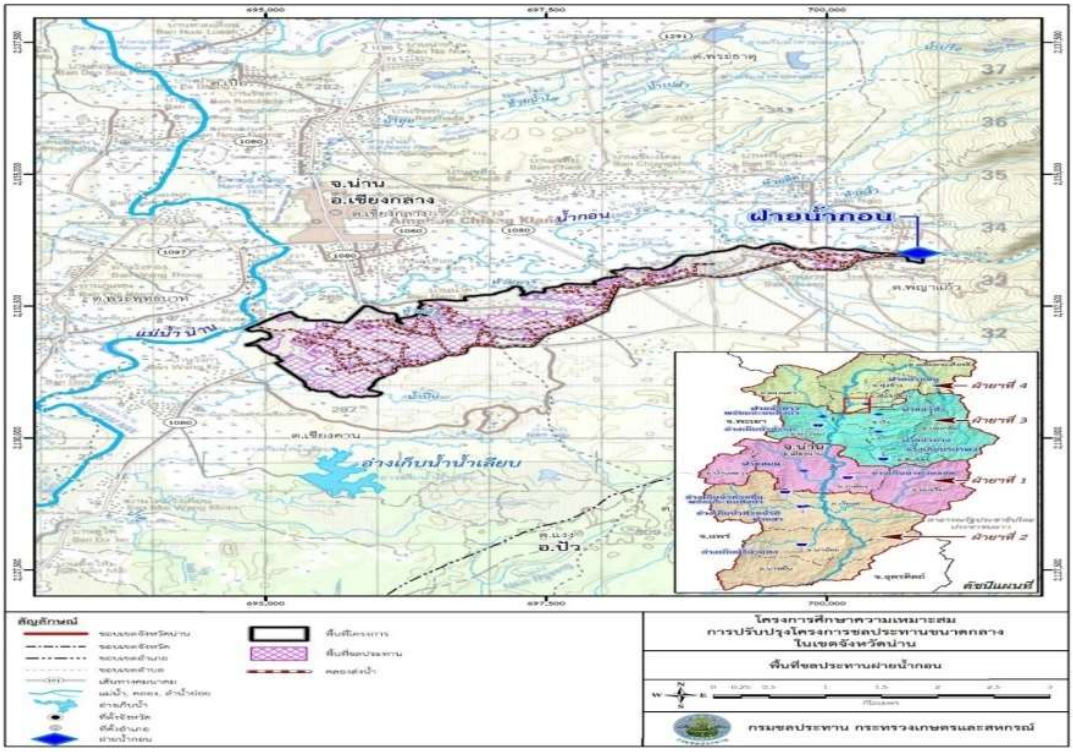

Figure 2. 1:50,000 map of the Kon Dam project area

2.3 *Map of households of water users in the Kon Dam Project area*

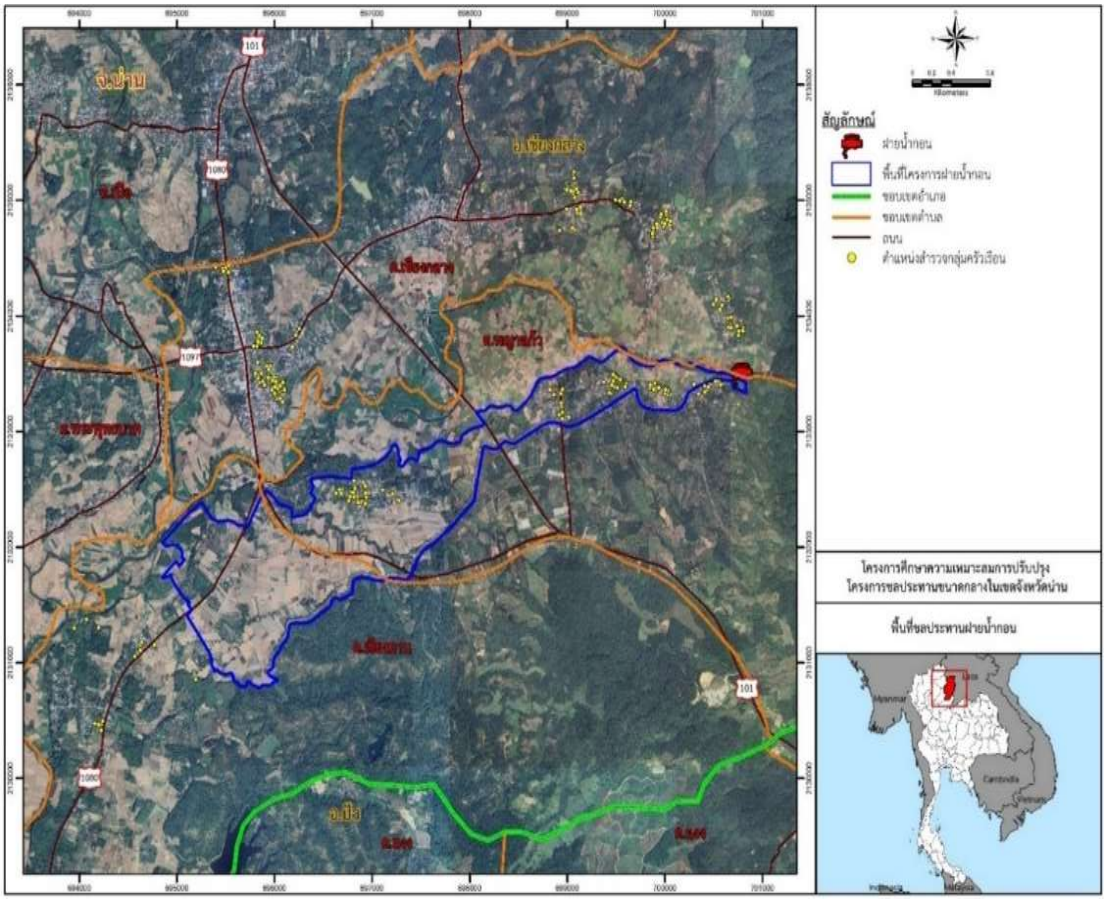

Figure 3. Map of households of water users in the Kon Dam Project area

Research Methodology

The study method consists of 4 steps as follows:

1. Preliminary data collection:

In collecting primary data, the researchers collected data from 2 sources; primary and secondary sources. The secondary source is collected from reliable sources such as local administrative organizations.

The target or sample group in the study is households living in the Namkon Weir project area who use water for agriculture and consumption from the Namkon Weir project as a main source.

2. Field visit

The researchers conducted field visit to the Namkon weir project by coordinating with relevant irrigation departments and local agencies to ensure access to the target group properly.

3. Data collection process

The researchers collected data from the target group, which is the households of water users. The researchers determined the irrigation area of the Nam Kon Dam project as the area of research using a questionnaire and a 1:50,000 map of the Nam Kon Dam area, Chiang Klang District, Nan Province having a total area of 2,598.19 rai, with an irrigation area or applicable area of 1,495 rai, consisting of 3 sub-districts and 10 villages, as follows: Chiang Klang Sub-district, a total of 3 villages: Village No. 5 Ban Sop Kon, Village No. 11 Ban Sop Kon II, and Village No. 13 Ban Sop Kon 13; Chiang Khan Sub-district, a total of 2 villages: Village No. 3 Ban Don Taen, and Village No. 4 Ban Wang Ka; and Phaya Kaew Sub-district, a total of 5 villages: Village No. 1 Ban Nam Kha, Village No. 2 Ban Khan Na, Village No. 3 Ban Phun, Village No. 4 Ban Phaya Kaew, and Village No. 7 Ban Muang. The total study area is 3 sub-districts and 10 villages. The details of the research methodology are as follows:

1) Secondary data collection from relevant documents, including village/ community basic information reports (NDRC 2C) prepared by the Community Development Department, Ministry of Interior, Chiang Klang District Development Plan, Sub-district Development Plan of Chiang Klang, Chiang Kan and Phaya Kaeo sub-districts.

2) Primary data collection by collecting at the household level using questionnaires to collect data using the sample size determination method of Taro Yamane's (1973, p.727) with the following formula:

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

where n is the number of sample households

N is the total number of households in the study area

e is the deviation value, with "e" set to 0.05

4. Analysis and Conclusion

The researchers applied a statistical processing application for social science research to demonstrate the results in the form of descriptive statistics using Pearson's Correlation Coefficient formula.

Related Literatures

In studying the factors related to public participation in water in the Namkon Weir area, Nan Province, the researchers have researched related literature with the concepts and theories as follows:

Concepts and theories on public participation

1. Definition of public participation

The definition of participation has various meanings.In defining the term and from research in various literature, it was found that many people have defined and provided the term for participation as follows:

Participation means providing opportunities for people or stakeholders to be involved directly or

indirectly, voluntarily and freely in terms of sharing opinions, making decisions, taking action, evaluating results, and sharing the benefits of public participation (Yanadei Koomprayoon, 2021).

Participation means that people participate in expressing their views, exchanging information and opinions, jointly presenting public problems and needs in the manner of joint decision-making, joint action, joint benefit-receiving, and joint monitoring and evaluation in order to solve problems and develop to meet the public needs (Thunyaluk Jaitieng, 2020).

People's participation or community's participation refers to the opportunity and availability that many parties, including the government, the people, or the community, participate in the responsibility and carry out various activities together.

The definition of public participation in other perspectives is that public participation means a group of people or a movement of people, throughout the past, has been an outsider of the bureaucracy and has increased its ability to control resources and institutions according to the current social conditions.

Public participation is when people or communities develop their capabilities to manage, control, utilize, and distribute resources and production factors available in society for the benefit of economic and social survival as appropriately needed, as members of society. In such participation, people develop perception and wisdom as expressed in the form of decision-making in determining their own lives individually.

Public participation is a process of involving citizens in development activities, sharing opinions, making decisions to solve their own problems, and using creativity, knowledge, and expertise together with the implementation of appropriate science.

Public participation is a process in which the target group of people are given the opportunity and use the opportunity to express their feelings, thoughts, and what they want, the problems they are facing, including demonstrating how to solve problems and taking action with minimal assistance from external agencies (Charoen Phasara, 1997) (Yanadei Koomprayoon, 2021)

Participation Process

For public participation in the community to carry out any activity that benefits the community, many scholars have proposed guidelines and processes for participation as follows:

Fornaroff (1980, cited in Sombat Namburi, 2019) proposed the community participation process, with details as follows:1) Planning, including decision-making in setting goals, strategies, and resources to be used, including monitoring and evaluation 2) Implementation 3) Using services from the project 4) Participation in obtaining benefits

Cohen, J.M., & Uphoff, N.T. (1981, cited in Sombat Namburi, 2019) described the steps of participation as follows: Step 1 is to participate in decision-making. In the decision-making process, the first thing to do is to define needs and prioritize. After that, select the policy and the relevant people. Decision-making is a continuous process that must be carried out in sequence, starting from the initial decision, during the planning process, and the decision during the implementation of the plan. Step 2 is to implement. Being part of the implementation of the project comes from the question of who will provide a benefit for the project and how, such as assisting in terms of resources, management, coordination, and requesting assistance in other areas, etc. Step 3 is to participate in receiving benefits. In terms of benefits, in addition to the importance of both quantitative and qualitative benefits, it is also necessary to consider the distribution of benefits within the group. The benefits of the project include both positive and negative benefits, which will be beneficial and harmful to individuals and society. And step 4 is to participate in the evaluation. The

important things to observe and participate in the evaluation are views, preferences, and expectations, which have a great influence and can change the behavior of individuals in different groups.

Participation Theories

1. Theory of Mass Persuasion, Abraham H. Maslow

Abraham H. Maslow stated that persuasion refers to using words or writing to create trust and action. Persuasion is beneficial in resolving conflicts in various operations and in achieving better results. Persuasion requires the art of creating attention for the matter to be persuaded, especially in terms of human needs. According to Abraham H. Maslow's theory, called the Hierarchy of Needs where human needs are arranged in order from least to most protent, consisting of 5 levels: 1) physiological, 2) safety, 3) social, 4) esteem, and 5) self-actualization.

2. National Morale Theory

National Morale Theory is the creation of encouragement or the creation of morale. People, in general, have physical and mental needs. If people have good morale, their work performance will be good, and they can overcome problems and obstacles. On the other hand, if they have weak morale or become demoralized, their work performance will also be weak eventually. This is due to morale is a mental situation that can be expressed in various forms of behavior.

3. Relevant Motivation Theories

Motivation refers to something influential that can stimulate the expression of any behavior to achieve the desired goal (Tikkhawet Konkaew, 2019), (Chareefah Hutyee, Supunnee Junpirom and Yaowalak Jittakoat, 2019). Psychologists divide motivation into 2 types as follows:

Intrinsic Motivation refers to a characteristic of a person who wants to act and learn something by themselves without the need for external stimuli, which include:

Attitude refers to a positive feeling that an individual has towards something, a stimulus for appropriate behavior.

Special Interest refers to the behavior of an individual who is particularly interested in a particular matter, resulting in paying special attention to that matter.

Extrinsic Motivation refers to a characteristic in which a person is motivated by external stimuli, which cause them to see a goal, resulting in behavioral expression, and leading to the person's goals or expectations.

Relevant Research

Sootawee Klinubon (2019) conducted research on community participation in the success of community development according to the philosophy of the sufficiency economy in Ban Hua Khao Chin, Huai Yang Thon Sub-district, Pak Tho District, Ratchaburi Province. This research has 3 objectives; to study community participation in the success of community development according to the philosophy of the sufficiency economy; to compare community participation in the success of community development according to the philosophy of the sufficiency economy, classified by individual factors and environmental factors and to study the problems, obstacles and suggestions on community participation in the success of community development according to the philosophy of the sufficiency economy in Ban Hua Khao Chin, Huai Yang Thon Sub-district, Pak Tho District, Ratchaburi Province. The results revealed that the level of community participation in the success of community development following the philosophy of the sufficiency economy in all aspects, the highest level was the participation in decision-making, followed by participation in obtaining benefits, and participation in evaluation. The aspect with the lowest average score was participation in operations. The results of the comparison of community participation in the success of community development following

the philosophy of the sufficiency economy, classified by individual factors and environmental factors, found that different genders, education levels, income, community status, and participation in various groups in the community were significantly different in the success of community development at a statistical level of 0.05. As for problems, obstacles, and suggestions regarding community participation in the success of community development following the philosophy of the sufficiency economy at Ban Hua Khao Chin, it was found that the problems and obstacles were solved effectively by community leaders, various agencies, and people in the community. The community has assembled various activities within the community until becoming a network with a learning center has been established concretely and has become a model for community development according to the philosophy of the sufficiency economy.

Yanyadej Kumprayoon (2021) conducted research on public participation in community development: A case study of the Minburi Uppatham Community, Minburi District, Bangkok. The objectives are to study the level of public participation in community development in the development of the Minburi Uppatham Community, Minburi District, Bangkok; to compare public participation in local development, the Minburi Uppatham Community, Minburi District, Bangkok, classified by gender, age, education level, occupation, and average monthly income in order to find out suggestions for the development of the Minburi Uppatham Community, Minburi District, Bangkok. Results of the research revealed that the level of public participation in community development for the development of the Min Buri Uppatham Community, Min Buri District, Bangkok, was overall at a moderate level. The first highest score was participation in evaluating community development results, the second highest score was participation in obtaining benefits, and the last was participation in the implementation. Hypothesis testing of personal factors, including gender, age, education level, and average monthly income of different sample groups, has effect mostly on the participation in the development of the Min Buri Uppatham community, Min Buri District, Bangkok, significantly different at the level of 0.05. And the suggestion for developing the community, Min Buri Uppatham, Min Buri District, Bangkok is that opportunity should be provided for the public to participate in the operations or to jointly present guidelines for decision-making in order to build confidence for the public that various information, opinions and needs of the public will be taken into consideration as an alternative into government administration.

Thunyaluk Jaitieng (2020) conducted research on public participation in the Phra Nakhon community, Bangkok, in the Development of Thai Youth Skills 4.0. The objectives were to study the level of public participation in the Phra Nakhon community, Bangkok, in the Development of Thai Youth Skills 4.0, and to study the guidelines, problems, and suggestions for public participation in the Phra Nakhon community, Bangkok, in the development of Thai youth skills 4.0. This study was survey research. Results of the research found that public participation in the Phra Nakhon community, Bangkok, in the Development of Thai Youth Skills 4.0 was at a moderate level. And guidelines for public participation in the community of Phra Nakhon District, Bangkok, in the Development of Thai Youth Skills 4.0, in decision-making participation, which is in the form of a committee, has participated in the practice by opening opportunities, opening minds, and opening up to all sectors to participate in expressing opinions to develop potential and create immunity for youth. In terms of participation in the benefits, it was found that both quantitative and qualitative aspects were involved. In terms of participation in the

evaluation, it was found to be in the form of older and younger siblings' relationships. Meanwhile, problems with participation were the limitation of location, insufficient budget, a small number of youths in the community, a lack of continuity in cooperation from government agencies in the community, and the relocation of youth to follow their parents, affecting the implementation of activities.

Thakul Homklin (2014) conducted research on Participatory Water Management in the Phetchaburi Irrigation Project. The objectives were to study the level of participation of central, regional, and local agencies in water management in the Phetchaburi Irrigation Project; to study the factors related to the participation of central, regional, and local agencies in water management in the Phetchaburi Irrigation Project; to study the factors affecting the participation of central, regional, and local agencies in water management in the Phetchaburi Irrigation Project; and to find guidelines to develop the participation of the government and central, regional, and local agencies in water management in the Phetchaburi Irrigation Project. The research tools consisted of questionnaires and structured interviews. Results of the research revealed that the level of participation of central, regional, and local agencies in water management in the Phetchaburi Irrigation Project in terms of participation in decision-making was at a moderate level. The participation in implementation was at a high level, participation in obtaining benefits was also at a high level, and participation in evaluation was at a moderate level. Community cultural factors and external support factors were significantly related to the participation of central, regional, and local agencies in water management in the Phetchaburi Irrigation Project at a level of 0.05. Community cultural factors and external support factors significantly affected the participation of central, regional, and local agencies in water management in the Phetchaburi Irrigation Project at a statistical level of 0.05. In-depth interviews with stakeholders in water management of the Phetchaburi Water Supply and Maintenance Project found that the guidelines for developing the participation of central, regional, and local agencies in water management in the Phetchaburi Water Supply and Maintenance Project irrigation area are to give importance to local organizations and water users in participating in determining water management policies, starting from the process of analyzing the problem and causes, participating in decision-making, participating in operations, including monitoring and evaluating the operations.

From the review of relevant literature, it was found that the factors that are related to or affect participation include demographic factors, including gender, age, education, and economic factors, including income. The researchers are interested in other factors, including communication and motivation factors, thus, the two factors were added to the research this time.

Results

In presenting the analysis results of factors related to public participation in water management in the Namkon Weir area, Nan Province, by dividing the presentation into 4 parts, consisting of the relationship of population, economic, communication, and motivation factors related to the public participation in the Nam Kon Weir area, Nan Province, as follows:

The results of the relationship of demographic factors related to public participation in water management in the Nam Kon Dam area, Nan Province, are shown in Table 1.

Table 1. The correlation between demographic factors and public participation in water management in the Namkon Weir area, Nan Province.

Correlation between demographic factors and participation in water management		Gender	Household role/status	Education	Water distribution scheduling	Attending meetings regularly	Inspection and maintenance	Cooperation in payment	Infrastructure maintenance	Adequacy to meet demand	Increased net income	Increased agricultural water usage	Officials attending meetings	Officials solving problems
Gender	Pearson Correlation	1	.247**	-.061	.049	-.045	.109	.108	-.035	-.045	-.095	-.034	.152*	.129
	Sig. (2-tailed)		.000	.363	.460	.500	.100	.105	.601	.496	.152	.611	.022	.051
	Sum of Squares and Cross-products	56.352	26.185	-8.696	2.780	-2.595	6.269	6.189	-2.018	-2.683	-5.348	-2.097	11.648	9.815
	Covariance	.249	.116	-.038	.012	-.011	.028	.027	-.009	-.012	-.024	-.009	.052	.043
	N	227	227	227	227	227	227	227	227	227	227	227	227	227
Household role/status	Pearson Correlation	.247**	1	.220**	.119	-.135*	.047	.068	.030	.223**	-.083	-.072	.019	.021
	Sig. (2-tailed)	.000		.001	.074	.042	.481	.305	.651	.001	.213	.279	.770	.749
	Sum of Squares and Cross-products	26.185	199.947	59.485	12.634	-14.687	5.066	7.374	3.291	24.767	-8.758	-8.401	2.815	3.053
	Covariance	.116	.885	.263	.056	-.065	.022	.033	.015	.110	-.039	-.037	.012	.014
	N	227	227	227	227	227	227	227	227	227	227	227	227	227
Education	Pearson Correlation	-.061	.220**	1	-.110	-.059	-.172**	-.032	-.134*	.020	-.045	-.045	.024	.003
	Sig. (2-tailed)	.363	.001		.098	.374	.009	.637	.044	.767	.502	.496	.718	.968
	Sum of Squares and Cross-products	-8.696	59.485	365.225	-15.815	-8.700	-25.106	-4.599	-19.665	2.974	-6.388	-7.159	4.696	.515
	Covariance	-.038	.263	1.616	-.070	-.038	-.111	-.020	-.087	.013	-.028	-.032	.021	.002
	N	227	227	227	227	227	227	227	227	227	227	227	227	227

**. Correlation is significant at the 0.01 level (2-tailed).*. Correlation is significant at the 0.05 level (2-tailed).

The results of the relationship of economic factors related to public participation in water management in the Namkon Weir area, Nan Province, are shown in Table 2

Table 2. The correlation between economic factors and public participation in water management in the Namkon Weir area, Nan Province

Correlation between economic factors and participation in water management		Water distribution scheduling	Attending meetings regularly	Inspection and maintenance	Cooperation in payment	Infrastructure maintenance	Adequacy to meet demand	Increased net income	Increased agricultural water usage	Officials attending meetings	Officials solving problems
Occupation	Pearson Correlation	-.032	-.106	.085	.140*	.061	.053	-.085	.040	.185**	.123
	Sig. (2-tailed)	.635	.112	.201	.035	.361	.424	.200	.545	.005	.064
	Sum of Squares and Cross-products	-11.101	-37.974	30.344	49.947	21.912	19.586	-29.740	15.515	88.238	58.075
	Covariance	-.049	-.168	.134	.221	.097	.087	-.132	.069	.390	.257
	N	227	227	227	227	227	227	227	227	227	227
Net Income	Pearson Correlation	-.085	-.157*	-.105	.059	-.109	-.086	.106	.026	-.034	-.041
	Sig. (2-tailed)	.201	.018	.115	.374	.101	.195	.110	.702	.609	.534
	Sum of Squares and Cross-products	-12.700	-23.991	-15.885	8.982	-16.696	-13.471	15.753	4.172	-6.921	-8.308
	Covariance	-.056	-.106	-.070	.040	-.074	-.060	.070	.018	-.031	-.037
	N	227	227	227	227	227	227	227	227	227	227

**. Correlation is significant at the 0.01 level (2-tailed).*. Correlation is significant at the 0.05 level (2-tailed).

The results of the relationship of communication factors related to public participation in water management in the Namkon Weir area, Nan Province, are shown in Table 3.

Table 3. The correlation between Communication factors and public participation in water Management in the Namkon Weir area, Nan Province

Correlation between Communication factors and participation in water management		Water distribution scheduling	Attending meetings regularly	Inspection and maintenance	Cooperation in payment	Infrastructure maintenance	Adequacy to meet demand	Increased net income	Increased agricultural water usage	Officials attending meetings	Officials solving problems
Access to Information	Pearson Correlation	-.069	.353**	-.261**	-.313**	-.009	-.300**	.213**	.275**	-.111	-.112
	Sig. (2-tailed)	.302	.000	.000	.000	.889	.000	.001	.000	.096	.091
	Sum of Squares and Cross-products	-3.392	17.841	-13.062	-15.683	-.471	-15.515	10.441	14.907	-7.427	-7.449
	Covariance	-.015	.079	-.058	-.069	-.002	-.069	.046	.066	-.033	-.033
	N	227	227	227	227	227	227	227	227	227	227
Methods to Facilitate Information Access	Pearson Correlation	.111	-.257**	.333**	.339**	.117	.426**	-.250**	-.176**	.233**	.215**
	Sig. (2-tailed)	.095	.000	.000	.000	.079	.000	.000	.008	.000	.001
	Sum of Squares and Cross-products	58.537	-138.749	178.264	181.498	63.163	235.066	-131.031	-101.604	167.260	152.211
	Covariance	.259	-.614	.789	.803	.279	1.040	-.580	-.450	.740	.674
	N	227	227	227	227	227	227	227	227	227	227

. Correlation is significant at the 0.01 level (2-tailed).. Correlation is significant at the 0.05 level (2-tailed).

The results of the relationship of motivational factors related to the public participation in water management *in the Nam Kon Weir area, Nan Province, are shown in Table 4.*

Table 4 The correlation between Motivation factors and public participation in water management in the Namkon Weir area, Nan Province

Correlation between Motivation factors and participation in water management		Water distribution scheduling	Attending meetings regularly	Inspection and maintenance	Cooperation in payment	Infrastructure maintenance	Adequacy to meet demand	Increased net income	Increased agricultural water usage	Officials attending meetings	Officials solving problems
Problems in occupation	.052	-.153*	.053	-.149*	-.112	.219**	-.119	.026	-.162*	-.209**	-.228**
	.432	.021	.424	.025	.092	.001	.073	.694	.015	.002	.001
	2.938	-8.767	3.035	-8.467	-6.445	22.665	-6.991	1.463	-9.947	-15.899	-17.172
	.013	-.039	.013	-.037	-.029	.100	-.031	.006	-.044	-.070	-.076
	227	227	227	227	227	227	227	227	227	227	227
Drinking water shortage problem	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]	.[a]
	.	.	.	.	.	.	.	.	.	.	.
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	227	227	227	227	227	227	227	227	227	227	227
Water usage shortage problem	.049	-.095	.144*	.153*	.093	-.072	.144*	-.175**	-.112	.085	.093
	.466	.155	.030	.021	.164	.281	.030	.008	.092	.201	.164
	2.555	-5.101	7.683	8.203	5.004	-6.987	7.921	-9.163	-6.476	6.088	6.546
	.011	-.023	.034	.036	.022	-.031	.035	-.041	-.029	.027	.029
	227	227	227	227	227	227	227	227	227	227	227
Agricultural water problem	.011	-.035	-.051	-.140*	-.105	.144*	-.089	.109	-.083	-.198**	-.190**
	.875	.598	.443	.035	.114	.030	.181	.100	.211	.003	.004
	.784	-2.683	-3.877	-10.634	-8.057	19.828	-6.969	8.119	-6.815	-20.145	-19.101
	.003	-.012	-.017	-.047	-.036	.088	-.031	.036	-.030	-.089	-.085
	227	227	227	227	227	227	227	227	227	227	227
Flooding problem	.101	-.137*	-.015	.003	-.017	1	-.061	.024	-.008	-.007	-.070
	.129	.039	.822	.964	.801		.361	.718	.908	.920	.291
	10.533	-14.661	-1.590	.322	-1.797	192.608	-6.648	2.502	-.885	-.947	-9.872
	.047	-.065	-.007	.001	-.008	.852	-.029	.011	-.004	-.004	-.044
	227	227	227	227	227	227	227	227	227	227	227

. Correlation is significant at the 0.01 level (2-tailed).. Correlation is significant at the 0.05 level (2-tailed).

Conclusion

The results of data analysis of the research using Pearson correlation, with a statistical relationship of 0.05, the results can be summarized for the relationship of factors related to public participation in water management in the Namkon Weir area, Nan Province, as follows:

Demographic factors and gender have a statistically significant relationship at 0.05 with participation in water management. Participation in evaluation, in the matter of evaluating the situation to plan water delivery in the applicable area of the irrigation officers together with the water user group, and household status, has a statistically significant relationship with participation in water management at a level of 0.05 Participation in decision-making, in terms of attending meetings together at every meeting, and the sub-factor of education, have a statistically significant relationship with participation in building maintenance at a level of 0.05

Economic and occupational factors have a statistically significant relationship at 0.05 with participation in water management. As for participation in operations, the members of water user groups usually cooperate in paying money to the water user group fund, and the net income aspect has a statistically significant relationship at a level of 0.05 with participation in water management. In terms of participation in decision-making, there was a joint attendance at every meeting.

As for factors of communication, information acquisition, and information reception methods were not significantly related at a level of 0.05 to participation in water management in all aspects.

Motivational factors and occupational problems have a statistically significant relationship at the level of 0.05 with participation in water management. In terms of participation in decision-making, there is a joint attendance at every meeting. As for participation in operations, members of the water user group usually cooperate in paying money into the water user group's fund. In terms of participation in obtaining benefits, there is more water for agriculture, resulting in an increase in agricultural productivity. The problem of water shortages has a statistically significant relationship at a level of 0.05 with participation in water management.

In terms of participation in operations, the condition of the water canal is monitored and maintained, which can be used without any obstacles throughout the water delivery period. Members of the water user group usually cooperate in paying money into the water user group fund very well. And in terms of participation in receiving benefits, obtaining sufficient water to meet the needs of the water usage cycle, and water problems for agriculture in the past 10 years (2014-2023), have a statistically significant relationship at a level of 0.05 with participation in water management. In terms of participation in operations, members of the water user group have usually cooperated in paying money into the water user group fund. And the flooding problem in the past 10 years, (2014-2023) has a statistically significant relationship at a level of 0.05 with attending the meeting together at every meeting.

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