



Article

Analyzing Sociodemographic Factors Influencing Citizen Participation: The Case of Infrastructure Planning in Khon Kaen, Thailand

Peeranun Panyavaranant¹, Thi Phuoc Lai Nguyen¹, Djoen San Santoso^{2,*}, Vilas Nitivattananon³ and Takuji W. Tsusaka¹

¹ Department of Development and Sustainability, School of Environment, Resources and Development, Asian Institute of Technology, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand; peeranun.panyavaranant@ait.ac.th (P.P.)

² Department of Civil and Infrastructure Engineering, School of Engineering and Technology, Asian Institute of Technology, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand

³ Urban Innovation and Sustainability (UIS) Program, Department of Development and Sustainability School of Environment, Asian Institute of Technology, P.O. Box 4, Klong Luang, Pathumthani 12120, Thailand

* Correspondence: djoensan@ait.ac.th or djoensan@ait.asia

Abstract: While public participation (PP) is a legal requirement for mega projects in most countries, some PP processes are perceived as the ceremonial fulfilment of obligations without the adequate involvement of citizens. However, limited empirical studies have explored the individual factors of PP in infrastructural development. To bridge this knowledge gap, this study investigated the sociodemographic factors influencing citizen participation in the light rail transit (LRT) project in Khon Kaen, Thailand by using sequential mixed methods to quantify and gain an in-depth understanding of citizen participation. Proportionate stratified random sampling was employed to select 505 respondents for the survey with a semi-structured questionnaire. Descriptive statistics were applied to elaborate the respondents' participation level (non-participation, tokenism, and citizen power), while multinomial logistic regression (MLR) was used to analyze seven sociodemographic attributes potentially associated with the participation categories. The results showed that the majority (67%) of the respondents participated at the medium level of participation (tokenism). The MLR analysis revealed that residential location, age, occupation, and income had significant effects on the likelihood of participation at a high (citizen power) level. Meanwhile, age and occupation had significant effects on medium participation behavior (tokenism). The findings shed light on how PP can potentially be enhanced through sociodemographic targeting when designing citizen involvement in infrastructure planning.

Keywords: citizen science; demographic difference; multinomial regression; peri-urban development; public hearing; transportation planning process



Citation: Panyavaranant, Peeranun, Thi Phuoc Lai Nguyen, Djoen San Santoso, Vilas Nitivattananon, and Takuji W. Tsusaka. 2023. Analyzing Sociodemographic Factors Influencing Citizen Participation: The Case of Infrastructure Planning in Khon Kaen, Thailand. *Social Sciences* 12: 225. <https://doi.org/10.3390/socsci12040225>

Academic Editor: Nigel Parton

Received: 1 March 2023

Revised: 31 March 2023

Accepted: 1 April 2023

Published: 10 April 2023



Copyright: © 2023 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

1. Introduction

Over the years, the concept of public participation (PP) has been recognized by most institutions as an important element in the decision-making process of developmental projects to ensure that communities affected by a project are given the opportunity to participate in the process (Sinclair and Diduck 2017). PP is promoted by humanitarian movements at the forefront of the people-first paradigm shift (Jennings 2000). In addition, PP is regarded as one of the milestones of democracy and local governance. It was designed to promote the transparency, accountability, and effectiveness of any modern government. Of late, PP has spread its roots across the world as nations have embraced PP to curb government–citizen conflicts arising from the marginalization of subpopulations and the uneven distribution of government services (Maurice et al. 2021).

In Thailand, it is mandatory according to Article 67 of the Constitution of the Kingdom of Thailand to conduct PP or a public hearing through an Environmental Impact Assessment (EIA) report at least three times before significant infrastructure projects. However, public notification and consultation have been reported to be deficient, especially in local development projects (Wangwongwatana et al. 2015). The literature reveals that during the PP process, citizens needed to be more adequately informed of discussions and the decisions made by authorities, though these decisions are in the public interest (Chaisomphob et al. 2015).

Meanwhile, infrastructure development projects keep evolving toward public–private partnership (PPP) to leverage private sector efficiency in public-purpose projects. For PPP to succeed, all parties must be vested, including end-users and any inconvenienced citizens (International Finance Corporation—Worldbank Grou 2019), which necessitates PP in the PPP context. PP processes were mentioned as one of the engagement tools for PPP to generate innovative ideas from the public and to ensure that the services provided are up to the expectations of society (Ng et al. 2010).

Based on the participatory governance concept, the success of PP is largely determined by how thoroughly and thoughtfully it is planned according to its context and the degree of citizen participation (Wiyaboon 2019). Thus, the identification of the driving factors is fundamental to effective PP that empowers citizens in the decision-making process. This study investigated the sociodemographic factors influencing local citizen participation. While the OECD identified sociodemographic features as critical to active citizen participation (Hingels et al. 2009), limited literature has explored PP in infrastructural development, while these studies have focused on awareness and attitude rather than the sociodemographic factors (Manowong and Ogunlana 2023). To bridge this knowledge gap, this study assessed the sociodemographic factors of citizens under the Khon Kaen light rail transit (LRT) PP process. This case was selected as it represents a bottom-up infrastructure development approach that was initiated and expected to be co-invested by municipal leaders and key business players under the PPP mechanism.

The research was expected to contribute to promoting meaningful PP in infrastructural projects and supporting the implementation of Sustainable Development Goal 11 by making cities and human settlements inclusive, safe, resilient, and sustainable.

Following this introduction, the next section provides a review of the related literature, Section 3 explains the research method, Section 4 presents the empirical results, and Section 5 provides discussions, followed by the concluding remarks in Section 6.

2. Literature Review

The subject of this study was citizen participation as a key to successful PP in the context of sustainable infrastructure planning. As explained by Rodney Slater, “Infrastructure planning should be about more than concrete and steel. It should be about building communities” (UKEssays 2018). A review of the relevant literature was conducted to revisit the factors that potentially influence citizen participation in local infrastructure planning from the citizen science perspective.

2.1. Sociodemographic Factors for Citizen Participation

The literature shows that sociodemographic factors have considerable influences on community participation. Baum et al. (2000) mentioned that the level of participation in social and civic community life is significantly influenced by individual sociodemographic attributes. Sociodemographic factors are also perceived to inform individual political attitudes and actions (Brown-Iannuzzi et al. 2017). Understanding sociodemographic factors helps in designing relevant participation strategies to support and incentivize local citizens to be better involved in the planning process.

Sociodemographic factors are also important in planning future infrastructure systems. For example, employment status and housing composition are often used in travel demand modeling. Demographic projections are communities used in economic projection, demand

management, and community comparisons. Basic sociodemographic attributes such as age, gender, relationships, marital status, and race are used for analyzing the mobility patterns of various population groups (Huang 2003).

There are two categories of infrastructure planning. Conventional (also called traditional or business-as-usual) infrastructure planning refers to current practices for making transport policies, programs, and investment decisions. In contrast, multimodal planning refers to decision making that considers various modes of infrastructure from the perspective of public requirements and local development (Litman 2011). This can influence all activities, from business to recreation and quality of life (Litman 2022). The second category, therefore, requires public involvement to shape the plan and development. PP in infrastructure planning takes a range of forms, including simply informing stakeholders of the decisions being made, soliciting and using their input in programs or policies under consideration, and collaborating with them to identify and address problems (Quick 2018).

In this study, sociodemographic factors were regarded as characteristics that identify people as belonging to subpopulations, such as age; gender; race; ethnicity; religious affiliation; marital status; education level; income; and employment status (position, duration of service, industry, etc.). In addition, the time of residence is one of the predictors of participation (Toruńczyk-Ruiz and Martinović 2020), as it contributes to stronger civic engagement (Kang and Kwak 2003). Humanistic geographers state that people's bonding with spaces represents a connection that fulfills fundamental human needs (Relph 2008). Figure 1 visualizes the associations between sociodemographic attributes and citizen participation in this study.

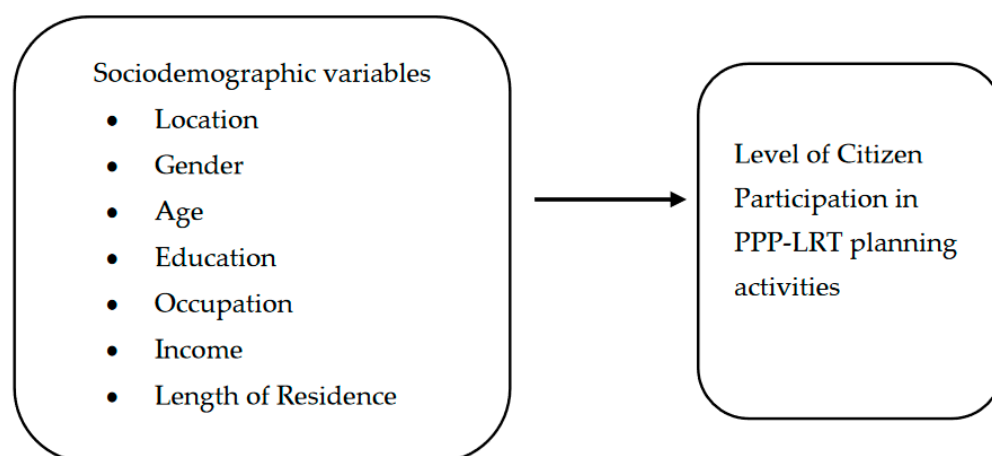


Figure 1. Associations between sociodemographic factors and citizen participation (Nyama and Mukwada 2022).

2.2. Typology of Citizen Participation

To describe participation patterns, this study applied the Ladder of Citizen Participation, created by Sherry Arnstein (1969), one of the most widely mentioned and influential models in the field of democratic PP. Citizen participation is also referred to as PP or public involvement. PP is the engagement process in governance whereby people participate together for deliberation and collective action within an array of interests, institutions, and networks, which helps develop civic identity and involve people in governance processes (Modeni and Lues 2021). The ladder model is a guide to observe who has power when important decisions are made, and it influenced several later models, including Elizabeth Rocha's Ladder of Empowerment (Rocha 1997) and Roger Hart's Ladder of Children's Participation (Hart 1979). The most important variable expressed through the ladder model is power and the degree to which the public, or 'have-nots', are offered an opportunity to meaningfully affect the planning process (Mbithi et al. 2018). Arnstein's typology of citizen

participation equated citizen participation with citizen power, arguing that effective public involvement in planning processes would require the sharing and redistribution of power.

Figure 2 illustrates the Ladder of Citizen Participation, which is useful for understanding patterns of citizen participation, specifically the quality of citizen participation, as it highlights the importance of not only the outcome but also the participation process.

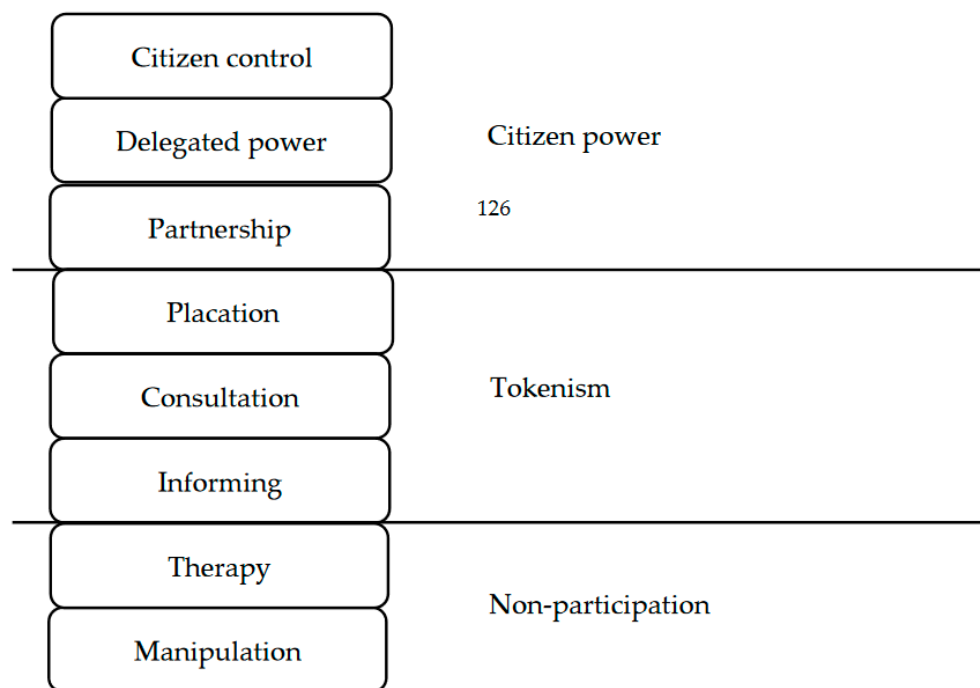


Figure 2. Ladder of Citizen Participation (Gaber 2020).

In Thailand, public hearings officially started in 1996 (Sustainable World 2019) with the issuance of a Prime Minister's Office Decree on Listening to Public Opinion by Public Hearing. A clause in the constitution stating that the government has to listen to how people in that community think reinforced the concept of PP and the idea behind the 1996 Decree. This led to widespread demand for PP through public hearings in the hope that the process would satisfy people at large and fulfill the legal requirements. However, there is concern regarding quality over quantity when aiming to comply with the laws. Previous studies have indicated that PP in Thailand faces problems and disruptions, resulting in skepticism over its performance (Chutarat 2017). It was in this regard that this article investigated PP and its influencing factors in the Khon Kaen LRT project area.

2.3. Infrastructure Planning Process

Infrastructure planning (Figure 3) is the process of identifying problems, assessing the context/situation, and planning the necessary infrastructure needs of the community. This happens during the initial stage of the infrastructure development cycle (Yang and Ye 2020). It includes identifying the physical assets and resources required to support the project's missions and goals, as well as estimating future growth and changes. Since the mission of any public infrastructure projects is to improve the well-being of society (Ng et al. 2012), successful local government infrastructure planning is a continuous and recurring process with citizen involvement and should adapt to the changing circumstances of a community.

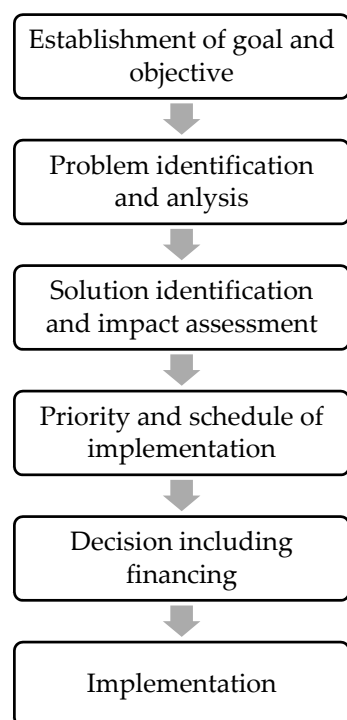


Figure 3. Infrastructure planning process (Pancho 2014).

The relevant literature also points out that community engagement is the future of infrastructural development, since infrastructural investors are concerned about socio-political risks and community protest. It is important to provide infrastructure and systems that support the interested groups and individuals in the community. In cases where there are gaps in capabilities for a successful outcome, opportunities for education and training should be provided.

According to a World Bank study, the following factors are of prime importance for infrastructure planning and decision making and should be considered for infrastructure planning processes: (1) sociocultural values, (2) geophysical space, (3) logistics and finance, (4) the timing and sequencing of decisions, and (5) social and economic sustainability (Read n.d.).

3. Materials and Methods

3.1. Research Design

This paper employed a sequential mixed-method approach. Generally, a research design might be considered mixed if it employs qualitative and quantitative approaches at any stage, including research question development, sampling strategies, data collection approaches, data analysis methods, or conclusions (Creswell and Garrett 2008). This method was considered for this study as the data represented two different perspectives, one drawn from quantitative data (sociodemographic/participation-level perspective) and one drawn from qualitative data (open-ended), such as personal experiences during PP activities. According to Mason (2006), mixing methods offers new ways of understanding the complexities and contexts of social experiences and enhancing the capacity for social explanation and generalization. Figure 4 shows the research design for this paper.

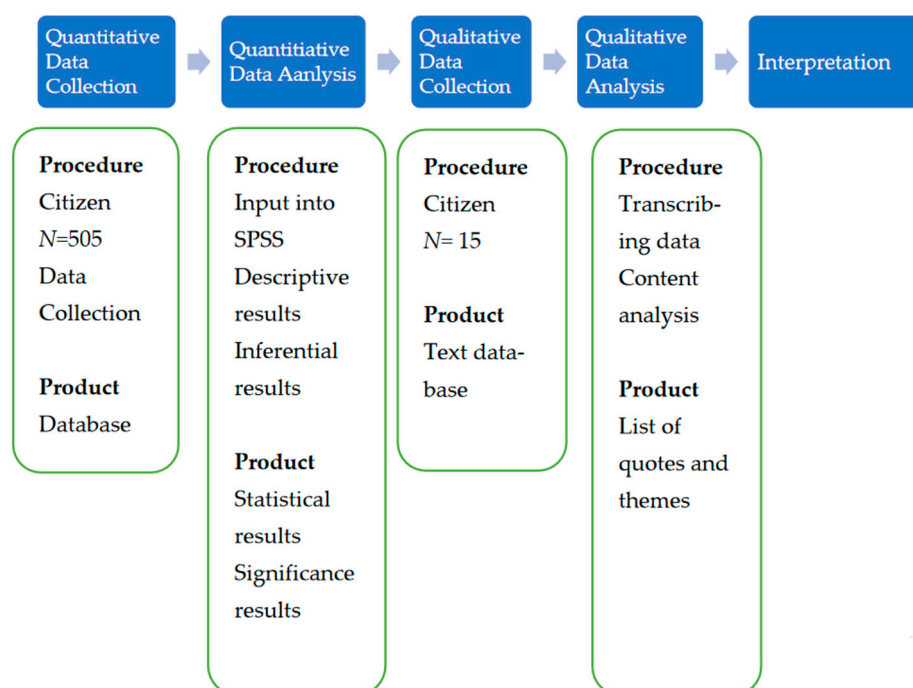


Figure 4. A sequential mixed-method research design adapted from Creswell (J. W. [Creswell 2015](#)).

3.2. Study Area and LRT Project Background

As the case city, we chose Khon Kaen (Figure 5a), which has had a unique development journey compared to other SMART cities in Thailand. Khon Kaen province lies in the geographical heart of Thailand's sprawling northeast plateau. The city was established in 1783 and is currently a major regional development center and university city, a 451 km driving distance from Bangkok. To support the SMART infrastructure policy, the development of the light rail transit (LRT) project was initiated for the 22.6 km long railway initially consisting of 16 stations. The project is in the first phase at present. This project pioneered the paradigm shift from the dependence of the infrastructure budget on central decision making with an aim to meet the challenge of city growth. This LRT project was an expected solution to local traffic congestion and acute urban density issues. In addition, the local entrepreneurs in the urbanized areas of the northeast anticipated the promise of new cross-border connections (with Laos and other countries) and promising investment ([MacDonald 2021](#)).

To understand the background of this infrastructure development project, the EIA report prepared for the LRT project by Khon Kaen University and city development plans were reviewed. Then, these were used to develop the onsite survey instrument and in-depth interview guidelines. In Thailand, EIA reports must be prepared by consulting firms registered with the Office of Natural Resources and Environmental Policy and Planning (ONEP), which receives reports and provides comments before approval. The EIA covers the following aspects: physical resources, biological resources, human use value, and quality of life. Projects and activities must comply with all applicable environmental and other standards. PP is required at least twice during the preparation of the EIA report ([Wangwongwatana et al. 2015](#)).

The EIA report and other related reports from Khon Kaen municipality referred to the public participation process, such as the EIA/HEIA public hearing, public workshops, open fora, community meetings, and focus group discussions, as strategies to better engage citizens in the planning of the proposed LRT. The activities were hosted by the municipality and facilitated by local CSO and provincial universities. The most official activity was the EIA/HEIA consensus conference, while the rest were engagement and capacity-building activities.

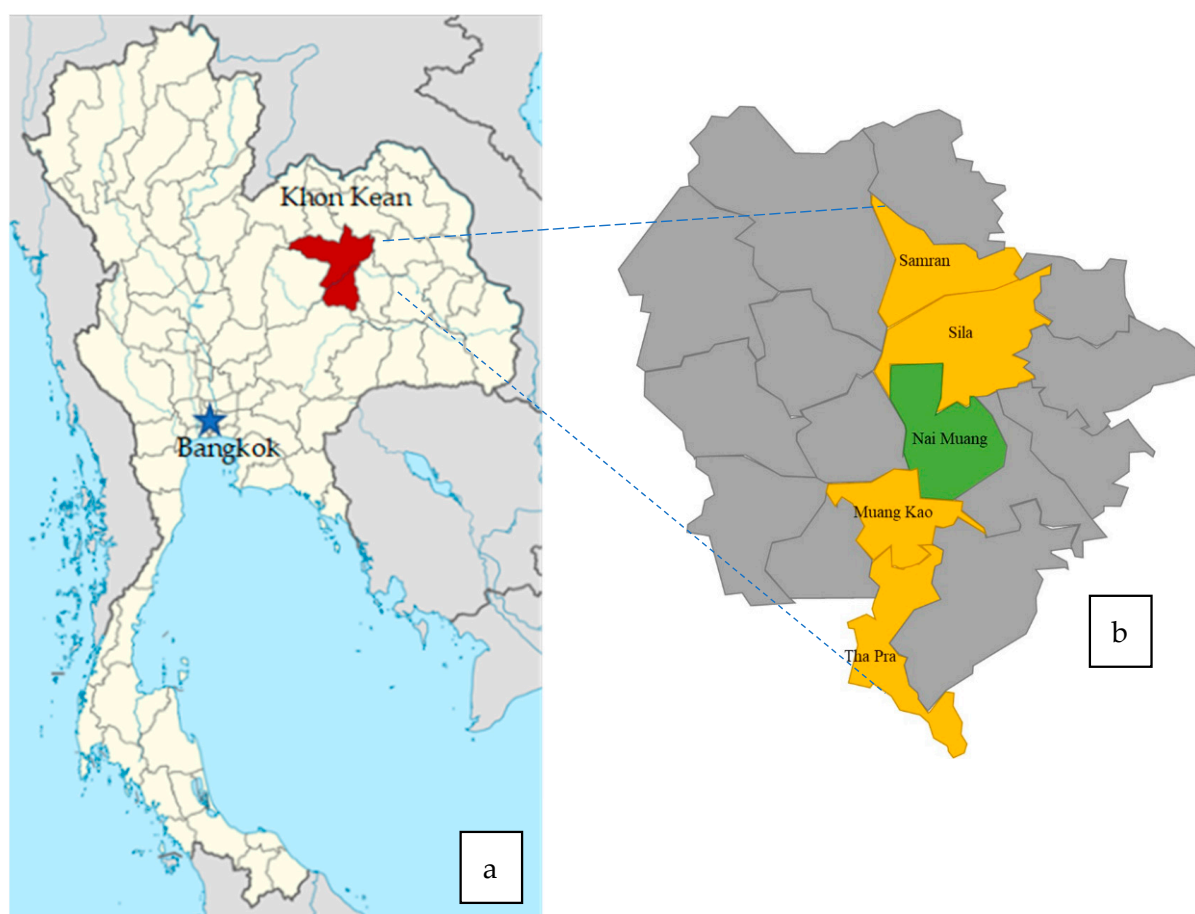


Figure 5. Study area: Khon Kaen, Thailand (NordNordWest 2009); (a) indicates Khon Kaen province, located in northeast Thailand; (b) indicates the Muang District with five municipalities included in this study, classified with green for urban characteristics and orange for peri-urban characteristics.

The LRT project area includes five municipalities (Figure 5b). The Khon Kaen Metropolitan Municipality is administratively divided into 95 districts, which can be further classified into five distinct categories: urban districts, peri-urban districts, private housing estates, housing estates for government employees, and slum communities. The urban and peri-urban districts constitute the majority of the districts in Khon Kaen (Khon Kaen Metropolitan Municipality, 2018). The urban area is characterized by high population density, while the peri-urban areas are defined as areas around or outside the urban areas that are ecologically and socioeconomically integrated into the core city. Based on the 2020 population statistics, there were 1,802,872 inhabitants in Khon Kaen Province at this time (Macrotrends 2023). Working-age residents represented the largest population segment (71.1%), followed by retirees (15.2%) and people under 15 years of age (13.7%). The project's value was estimated at THB 15 billion (USD 422 million), and the public and private sectors in the province were committed to jointly investing in the project. In 2016, the Thai government approved the project. In March 2017, the Khon Kaen Mayor announced that a state enterprise, Khon Kaen Transit System Co., owned by the city and the four surrounding municipalities, would be established with capital of USD 130,810 to operate the line.

In addition, Khon Kaen city leaders and key business players announced public-private partnerships (PPP) as the principal agents driving the construction of the urban image and the reorganization of urban space (Tupmongkol and Wongpreedee 2022) with the government's PPP fast-track scheme. Later, the concept of transit-oriented development (TOD) was considered in this infrastructure development area. TOD involves the integration of land use planning with a mass transit system in a way that promotes the

use of public infrastructure over private automobiles (Kamnuansilpa et al. 2020). TOD will be applied to a variety of commercial areas, residential areas, and land-use activities. Figure 6 shows the project areas and the TOD-PPP plan. If successfully implemented, Khon Kaen will be the second city in Thailand after Bangkok to have its own rail system (Khon Kaen City Development Co., Ltd. n.d.). The LRT line runs along the north–south axis along Mittrarhap Road through the center of Khon Kaen City. The red line starts from Sam Ran and travels to Tha Phra (22.6 km). Meanwhile, the yellow line, blue line, green line, and pink line are in the planning stage. In compliance with Sections 56 and 59 of the Constitution of the Kingdom of Thailand, B.E. 2540 (1997), the project organized a public hearing to inform a feasibility study, design the EIA, and prepare bidding documents for the construction.

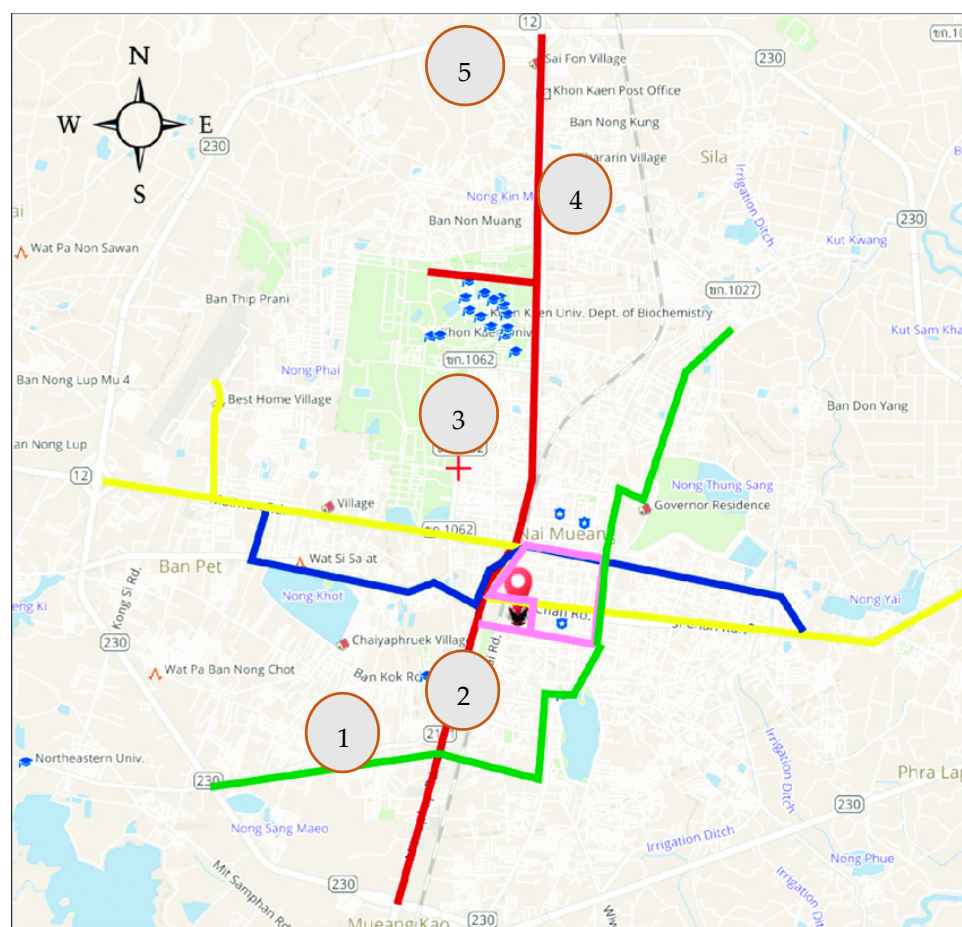


Figure 6. The visual presentation of the approved LRT route (RED line) for the KK LRT north and south line, representing 22.80 km through five municipalities numbered 1–5 (Sudhipongpracha and Dahiya 2019).

3.3. Variables

The dependent (participation-level) variable was transformed into an ordinal variable with three levels: non-participation, tokenism, and citizen power. The indicators were revised according to Arnstein's (1969) Ladder of Participation. Descriptive indicators were used to measure citizens' participation patterns, as shown in Table A1. The average score for the Likert scale was calculated over all the items, for which Cronbach's α was 0.80. Meanwhile, the six explanatory variables were based on the Demographics of Thailand Household Basic Information Survey 2020. They included gender, age (years), education, occupation, and monthly income, as shown in Table 1. The survey questions were designed to cover the PP activities from local administration records, namely, (1) SMART city devel-

opment planning, (2) light rail transit (LRT) project planning, and (3) light rail transit (LRT) impact assessment.

Table 1. The respondents' characteristics in urban and peri-urban areas ($n = 505$).

		Urban (%)	Peri-Urban (%)	χ^2 (<i>p</i> -Value)
Total		44.0	56.0	
Gender	Male	18.8	24.2	0.157
	Female	25.2	31.9	
Age (years)	18–24	6.9	6.3	0.295
	25–34	7.5	10.3	
	35–44	5.9	10.9	
	45–54	12.5	15.8	
	>54	11.1	12.7	
Education level	Less than high school	5.9	9.1	0.001
	High school	12.3	27.7	
	Bachelor or above	25.7	19.2	
Occupation	Student	4.8	4.0	0.001
	Unemployed	5.7	10.9	
	Gov. officer	8.7	5.0	
	Employee	10.9	14.3	
	Retiree	7.9	10.1	
	Other	5.9	11.9	
Income (THB per month)	≤7000	13.5	24.2	0.001
	7001–30,000	25.7	28.7	
	>30,000	4.8	3.2	
Duration of residence (years)	≤10	3.6	7.9	0.920
	11–30	15.8	14.1	
	31–50	14.3	20.0	
	>50	10.3	14.1	

3.4. Sampling and Data Collection

The population impacted by the LRT project was identified through the dataset obtained from municipalities, PP organizers, and community leaders. It included 216,071 individuals from the five municipalities. The sample size for the onsite survey was decided upon by referring to Yamane's formula (1967), with a 5% margin of error. Accordingly, the minimum suggested sample size was found to be 399 respondents. Proportionate sampling was used to obtain a fair representation of the sample from one urban and four peri-urban municipalities. The inclusion criteria were being over 18 years old and able to communicate. Thereafter, simple random sampling was used based on the invitation name list acquired. Consent to provide information was obtained. The sample size for each municipality is shown in Table 2. For the in-depth interviews, the respondents were a subset of the survey respondents. Therefore, they came from all the five municipalities affected by the LRT project. Three interviewees were randomly selected from each municipality, i.e., 15 in total.

As for the data collection, the onsite survey was conducted with 505 respondents residing in areas along the first LRT route, with assistance rendered by the local youth council with prior training on the survey instrument. The questionnaire had three parts: The first part collected respondents' sociodemographic information. The second part elicited their overall impression of PP activities during the first phase of the LRT project. The third part assessed the level of citizen participation. A five-point Likert scale was used to assess their participation behavior: (1) strongly disagree, (2) disagree, (3) uncertain, (4) agree, and (5) strongly agree. In total, there were 39 questions in the questionnaire. The respondents were asked to describe their major actions during the PP activities on the five-point Likert scale, such as exchanging and asking for information, proposing community needs, pushing

the community needs to the official agenda through the community committee, and voting for plans or solutions that may affect their quality of life.

The in-depth interviews were carried out with 15 informants from the five municipalities affected by the project to clarify the interpretation of the results of the survey. The in-depth interviews aimed to obtain information on individual experiences, perception, and reactions regarding PP activities, especially respondents' experiences in terms of their participation patterns, process, preparation before and after the PP activities, and challenges during the process. Each interview took up to one hour either in person or via telecommunication tools (e.g., videoconferencing).

Table 2. Sample size for the survey.

Municipality	No. of Villages	Population	Proportion of Population	Number of Respondents
Nai Muang	-	118,203	55%	218
Sam Ran	13	9637	4%	18
Tha Phra	20	19,197	9%	35
Muang Kao	17	24,840	11%	46
Sila	28	44,194	20%	82
		216,071	100%	399

3.5. Analytical Methods

Descriptive statistics were used to summarize the respondents' characteristics and participation patterns. Non-parametric inferential statistics such as the chi-squared test, Mann–Whitney U test, and Kruskal–Wallis H test were used to assess the differences in characteristics and participation levels between the urban and peri-urban areas. The in-depth interviews were analyzed using content analysis to conceptualize the key ideas of participation patterns.

To identify the factors influencing participation, the multiple regression method was applied. Regression analysis assesses the relationship between one dependent variable and two or more independent variables. First, the multicollinearity among the independent variables was tested using the VIF (variance inflation factor), which indicated no serious multicorrelation (Table A2). The categorical and ordinal independent variables, such as residential location, education, and occupation, were transformed into sets of dummy variables before inclusion in the regression analysis (STATISTICS HELP n.d.). Ordinal regression is the popular choice when the dependent variable is on the ordinal scale (Papaoikonomou 2021). However, ordinal regression requires the proportional odds assumption. The proportional odds test was performed, and the following results were obtained: Wald $\chi^2 = 548.04$, d.f. = 28, p -value = 0.000. This did not support the proportional odds assumption, and thus multinomial logistic regression was applied instead (National Centre for Research Method n.d.; The Analysis Factor n.d.).

Multinomial regression analysis is applied when the dependent variable fits into more than two categories. The estimated coefficients in the multinomial logit represented the marginal effects of the predictor variables on the likelihood (i.e., log odds ratio) of having each level of citizen participation instead of non-participation. Positive (negative) coefficients indicated positive (inverse) relationships between predictors and participation. Thus, the analysis provided insights into the sociodemographic attributes associated with PP at different levels.

4. Empirical Results

4.1. Sociodemographic Characteristics of the Respondents

There were more female respondents (57%) than male. More than half (56%) of the respondents were residents of the peri-urban municipalities (Samran, Tha Pra, Muang Kao, and Sila), while the rest (44%) were from urban areas (Nai Muang). The age group

45–54 years accounted for 28% of the respondents, followed the group of over 54 years old (24%). The youth segment accounted only for 13%. As for education level, Bachelor's degree or above accounted for 45%, followed by a high school diploma (40%). Employed respondents accounted for 25%, while retirees accounted for 18%. One third (34%) of the respondents had resided in the area for 31–50 years, 30% for 11–30 years, and 24% for more than 50 years. It was observed from the respondent profiles that they were neither illiterate, gender-biased, nor extremely poor, which may have otherwise impeded political participation. In other words, they appeared ready to engage in PP activities.

Table 1 shows the sociodemographic characteristics of the urban and peri-urban respondents. The education level was significantly higher in the urban areas ($p = 0.001$); so was income ($p = 0.001$). Occupation differed significantly, as there were more unemployed people in the peri-urban areas ($p = 0.001$). On the other hand, there was no significant difference in the other attributes (gender, age, and duration of residence).

4.2. Participation Patterns

Figure 7 shows the results for the citizen participation patterns in the PP activities of the LRT project according to the Ladder of Citizen Participation by Sherry Arnstein. The overall results indicated that the majority of the respondents (67%) had a tokenism level of participation (apparently offering an opinion and concern), while 22% showed the citizen-power level of participation (freely providing solutions and decisions for future directions). The remaining 11% described that their participation level fell into the non-participation level.

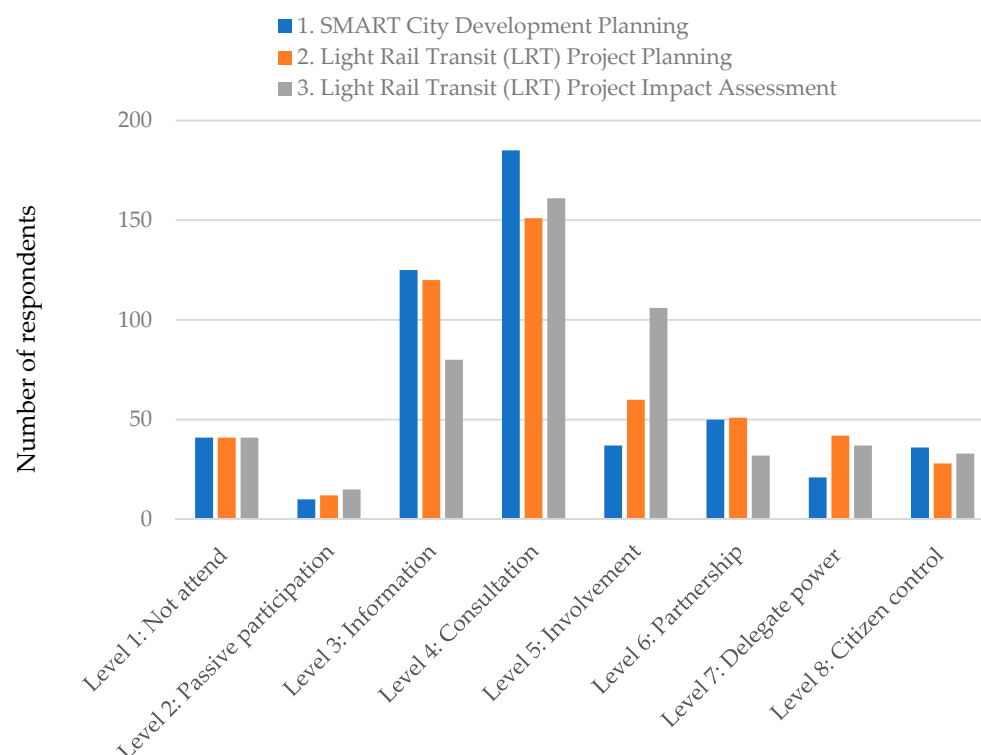


Figure 7. Citizen participation patterns in PP activities of the LRT project (n = 505).

Table 3 shows the results for the participation levels of urban and peri-urban respondents analyzed by the Mann–Whitney U test. For SMART city development planning, the urban respondents had a mean score of 3.29 vs. 3.59 for the peri-urban respondents. The difference was statistically significant ($p = 0.000$) according to the U test. For transit (LRT) planning activity, the urban respondents had a mean score of 3.31 vs. 3.62 for the peri-urban respondents. The difference was statistically significant ($p = 0.000$). As for the project impact assessment activities, the urban respondents showed a mean score of 3.28 vs. 3.49

for the peri-urban respondents, and the difference was significant ($p = 0.000$). These results indicated that the peri-urban respondents perceived themselves to be better-involved in PP activities than the urban respondents.

Table 3. The respondents' patterns of public participation in urban and peri-urban areas ($n = 505$).

		Overall		Urban		Peri-Urban		<i>p</i> -Value
		Mean	SD	Mean	SD	Mean	SD	
SMART City Development Planning								
Citizen Power	Citizen control	4.00	0.58	3.79	0.149	3.96	0.14	≤0.001
	Delegate power	3.48	0.17	3.26	0.178	3.60	0.16	≤0.001
	Partnership	3.00	0.49	2.81	0.173	3.22	0.14	≤0.001
	Total	3.49	0.33	3.29	0.167	3.59	0.10	≤0.001
Tokenism	Involvement	2.67	0.18	2.60	0.158	2.70	0.12	1.000
	Consultation	2.17	0.17	2.16	0.167	2.22	0.16	0.250
	Informed	1.67	0.12	1.71	0.128	1.80	0.11	1.000
	Total	2.17	0.33	2.16	0.151	2.24	0.13	0.087
Non-participation	Passive participation	1.18	0.17	1.18	0.166	1.18	0.17	0.970
	Non-attendance	1.28	0.16	1.25	0.113	1.31	0.15	0.992
	Total	1.18	0.17	1.18	0.166	1.18	0.17	0.970
Overall		2.28	0.28	2.21	0.161	2.34	0.13	≤0.001
Light Rail Transit Planning								
Citizen Power	Citizen control	3.75	0.44	3.71	0.187	3.96	0.16	≤0.001
	Delegate power	3.28	0.52	3.24	0.175	3.67	0.16	≤0.001
	Partnership	3.12	0.59	2.98	0.172	3.22	0.18	≤0.001
	Total	3.38	0.52	3.31	0.178	3.62	0.17	≤0.001
Tokenism	Involvement	2.62	0.37	2.69	0.182	2.38	0.12	0.397
	Consultation	1.94	0.70	2.10	0.154	2.15	0.17	0.799
	Informed	1.68	0.66	1.80	0.168	1.67	0.16	0.809
	Total	2.08	0.57	2.20	0.168	2.07	0.17	0.110
Non-participation	Passive participation	1.45	0.46	1.09	0.152	1.23	0.16	0.087
	Non-attendance	1.35	0.46	1.32	0.15	1.38	0.15	0.076
	Total	1.45	0.46	1.09	0.15	1.23	0.16	0.087
Overall		2.30	0.52	2.20	0.17	2.30	0.18	≤0.001
Light Rail Transit Project Impact Assessment								
Citizen Power	Citizen control	3.81	0.51	3.71	0.16	3.94	0.15	≤0.001
	Delegate power	3.23	0.64	3.27	0.14	3.32	0.19	≤0.001
	Partnership	2.86	0.25	2.87	0.18	3.21	0.13	≤0.001
	Total	3.30	0.47	3.28	0.16	3.49	0.16	≤0.001
Tokenism	Involvement	2.64	0.64	2.67	0.13	2.48	0.14	0.634
	Consultation	1.91	0.79	2.04	0.11	2.08	0.15	0.078
	Informed	1.58	0.47	1.67	0.12	1.75	0.15	0.411
	Total	2.04	0.63	2.13	0.12	2.10	0.15	0.560
Non-participation	Passive participation	1.64	0.46	1.17	0.17	1.11	0.16	0.077
	Non-attendance	1.32	0.54	1.27	0.15	1.37	0.15	0.089
	Total	1.64	0.46	1.17	0.17	1.11	0.16	0.077
Overall		2.33	0.52	2.19	0.15	2.23	0.15	≤0.001

Note: SD—standard deviation. The *p*-values are for the Mann–Whitney U test.

4.3. Factors Influencing Citizen Participation

The results for the multinomial regression are presented in Table 4. The significant factors influencing participation at the citizen-power level as opposed to non-participation were residential location (peri-urban); age (25–34, 35–44, 45–54); occupation (unemployed/ gov. officer/employed/retired/other); and income (THB 7001–30,000 (USD 197–844),

$\geq 30,001$ (USD 864)). For the tokenism level as opposed to non-participation, the significant factors were age (25–34, 35–44, ≥ 54) and occupation (gov. officer/employed). An insignificant variable for citizen-power level as opposed to non-participation was the duration of residence. For the tokenism level as opposed to non-participation, residential location, income, and the duration of residence were also found to be insignificant for this case.

Table 4. Sociodemographic factors influencing citizen participation: multinomial logistic regression (n = 505).

PO	Variable	Coeff.	Standard Errors	p-Value
Citizen Power	×1 Peri-urban	27.186	52.354	≤ 0.001
	×2 Female	0.748	1.101	0.886
	×3 Age 25–34	−1.243	14.669	≤ 0.001
	×3 Age 35–44	−0.058	14.683	≤ 0.001
	×3 Age 45–54	−1.102	14.641	≤ 0.001
	×3 Age ≥ 54	3.343	14.827	0.972
	×4 Highschool	4.244	3.763	0.459
	×4 Bachelor or above	7.495	5.144	0.520
	×5 Unemployed	5.156	38.738	0.005
	×5 Gov. officer	7.440	34.767	≤ 0.001
	×5 Employed	14.147	25.861	0.000
	×5 Retired	14.172	25.329	0.001
	×5 Other	32.310	25.087	≤ 0.001
	×6 Income 7001–30,000	−3.804	6.352	0.005
	×6 Income $\geq 30,001$	2.612	13.547	0.001
	×7 Residence 11–30 years	0.865	0.570	0.988
	×7 Residence 31–50 years	4.393	1.373	0.925
	×7 Residence ≤ 50 years	2.136	1.052	0.933
	Intercept	17.024	51.614	0.925
Tokenism	×1 Peri-urban	5.317	0.564	0.975
	×2 Female	−0.201	0.319	0.999
	×3 Age 25–34	3.040	0.799	0.002
	×3 Age 35–44	2.351	0.740	≤ 0.001
	×3 Age 45–54	1.058	0.624	0.953
	×3 Age ≥ 54	−0.434	0.586	≤ 0.001
	×4 Highschool	−0.393	0.542	0.963
	×4 Bachelor or above	0.335	0.519	0.953
	×5 Unemployed	1.238	0.504	0.959
	×5 Gov. officer	1.757	0.409	≤ 0.001
	×5 Employed	0.332	0.388	≤ 0.001
	×5 Retired	0.479	0.467	0.948
	×5 Other	2.142	0.651	0.949
	×6 Income 7001–30,000	3.992	1.053	0.951
	×6 Income $\geq 30,001$	2.835	0.959	0.975
	×7 Residence 11–30 years	4.918	1.439	0.747
	×7 Residence 31–50 years	2.317	0.609	0.945
	×7 Residence ≤ 50 years	1.304	0.568	0.942
	Intercept	6.189	3.406	0.937

LR test (*d.f.* = 54) = 804.699 (*p* = 0.000). Pseudo R^2 = Nagelkerke: 0.980; McFadden: 0.949; Cox and Snell: 0.797

Note: PO = participation outcome.

The coefficients of the age groups 25–34, 35–44, and 45–54 appeared negative at the citizen-power level; so did those of the middle-range monthly income (THB 7001–30,000; USD 197–844). In other words, the respondents in the age segment 25–54 and middle-range monthly income group tended not to participate at the high level (citizen power). The results generally indicated that the sociodemographic factors exhibited remarkable influences on high-level participation but fewer influences on medium-level participation.

These findings confirmed the previous study by Baum et al., which found that individual sociodemographic attributes influenced the level of participation.

4.4. Urban and Peri-Urban Participation Experiences

The in-depth interviews were conducted to understand individual participation experiences in the study areas. Data from these interviews reflected the context of PP and elaborated the quantitative findings on the different citizen participation patterns with a U-test analysis and the influencing factors of participation with an MRL analysis, such as residential location (peri-urban) and occupation (unemployed/government officer/employed/retired/other). For example, the peri-urban interviewees referred to their degree of participation as at the citizen-power level, i.e., they were able to articulate their concerns about community issues, such as the route plans and impact assessment of the LRT project. They also mentioned that during the PP activities, they voted for the design of development plans and exchanged information and ideas among stakeholders. Therefore, they had chances to channel their issues and concerns during the session, and the issues were recorded in the reports or appeared in local online news. Moreover, casual gatherings at peri-urban communities were an effective community network platform to raise awareness of the LRT project. However, they had some difficulties in understanding the technical terminology, which prevented them from proposing solutions and suggesting community benefits at the decision-making level. Nevertheless, they managed to grasp the big picture of the opportunities. Additionally, the interviewees expressed that the LRT project would bring economic opportunities, such as work for small vendors along the route or in new jobs, as they were unemployed.

On the other hand, the U-test results shown in Table 3 indicated significant differences between urban and peri-urban respondents in participation patterns. According to the interview notes, the urban residents stated that their opinions might not have been necessary, because their voices had less influence than those of certain privileged groups. Moreover, general users of the LRT and those affected by the project implementation had doubts about how the benefits would be shared with surrounding communities. Furthermore, many parts of the project planning remained pending approval by the central government. This somehow discouraged residents from active participation during the PP process. These interview statements reflected the quality of infrastructural planning implementation from the identification of problems to planning the necessary infrastructural needs of communities. It appeared that the affected communities were not involved in each stage of the planning process in terms of information exchange or consultation.

5. Discussions

The sociodemographic attributes of the urban and peri-urban citizens showed some differences in the aspects of education level, occupation, and income level. Since many central government interventions and financing plans for the development of settlements are provided based on the residential classification, the complementary roles of local governments are critical in dealing with the changing characteristics caused by urbanization (Aijaz 2019). Peri-urban citizens in this study were more likely to be unemployed or running their own business, whereas urban citizens were more likely to be studying or working for the government. Maarseveen (2021) found that, in the Netherlands, children who grew up in urban areas attained higher levels of human capital compared to those in rural areas (Maarseveen 2021).

The citizen participation assessment illustrated a moderate level of participation (“tokenism”) on average, as per the Ladder of Citizen Participation. This finding somewhat contrasted with Siroros and Haller (2015), who argued that PP in Thailand has been used for public relations purposes rather than for real PP (Siroros and Haller 2015). Our result may have been due to the success of the local participatory approach to Khon Kaen city development during the past several years, such as the creative community development model and the Khon Kaen Smart Living Lab for SMART Cities. The Khon Kaen municipality

has long been known for its citizen participation approach in city planning processes. The in-depth interviews observed a strong sense of openness in infrastructure development, allowing citizens to seek opportunities arising from the LRT development. [Thananithichot \(2012\)](#) illustrated that Thai citizens have diverse attitudes toward politics and democracy, which can be explained by the differences in socioeconomic background. He also confirmed that residents of Bangkok exhibited the lowest level of democratic support, while rural residents registered the highest.

The MLR analysis showed that residential location, age, occupation, and income had significant effects on high-participation behavior (i.e., citizen power), while age and occupation had significant effects on medium-participation behavior (i.e., tokenism). Specifically, the age range of 25–44 and a middle-range monthly income were found to be inversely related to the likelihood of high participation. The results for the peri-urban residents with high-participation behavior supported the study by the Asia Foundation ([Lao et al. 2019](#)), showing that, currently, residents of northeastern Thailand (Isan) are politically savvy and well-aware of their rights regarding PP, in contrast with the past perceptions of Isan people as unsophisticated peasants who are docile, obedient, and uneducated. This might partly explain our findings, because the peri-urban areas were more characteristic of the northeastern region than the urban areas.

The results also indicated that the occupation category of unemployed raised the likelihood of high participation more than the other categories of occupation. Unemployed people are generally equipped with time flexibility, which might explain their higher degree of citizen participation. On the other hand, urban respondents mentioned difficulty in finding time for participation despite living near the PP activities venue. In Thailand, PP activities, especially EIAs or EHIAs, are formal and inflexible ([Kantamaturapoj et al. 2020](#)). Most of the consensus PP activities were organized during office hours. Therefore, the official decision making or voting on some infrastructural options must be conducted on site. These findings resonated with those of the previous literature, which identified a lack of time as one of the barriers to PP ([Lao et al. 2019](#)). This situation should be addressed, since there is an increasing trend of open opportunities for people to participate in the development of services and policies and comment on draft laws, as well as more scrutiny of the work of the state. The United Nations' E-Government Survey 2022 revealed that Thailand's e-Participation Index (EPI) was ranked 18, improving from 33rd and ranked 2nd in the ASEAN.

The inverse relationship of the young-adult and middle-age (25–44) groups with high participation resonated with Shea's study, in that young adults are generally labeled as apathetic or avoiding civic duties, though unconventional means of action, such as social media engagement and volunteering, indicate that young voters may be motivated but do not use traditional modes of participation as frequently as older adults ([Shea 2015](#)). The reasons for this are not only the senior culture, but also that young adults prefer different forms of participation than those practiced by adults ([Quintelier 2007](#)). Moreover, they tend to be distracted by concerns with work and family responsibilities.

The findings revealed that the differences in the socioeconomic characteristics of local citizens in infrastructural project areas could impact PP performance either positively or negatively (Litman, Introduction to Multi-Modal Transportation Planning 2022). It is important to close the gap between the privileged group and the civic group. In many cases, the privileged group accumulates more human and financial capital than ordinary citizens. The local government or PP organizer should be aware of the gap and identify a common ground for all groups during the PP activities. Progressing the level of participation from tokenism to citizen power is the next step for local administrations, which is in line with the gradual shift in international development initiatives from centrally planned top-down governance to community-driven participatory bottom-up approaches. Providing capacity-building support or accessibility support to PP activities may improve PP performance. Moreover, open and inclusive PP that incorporates older persons, persons with disabilities, youth, and women in developing infrastructural plans helps support their quality of life

through green space, universal design in public transport, streetlights, and safety, which leads to trust and partnership for better development (Daniel 2015).

Regarding the external validity of the research findings, they could potentially be applied to citizens with urban and peri-urban characteristics in similar cultures and settlements. This research framework could be applied to other PP processes for different issues and areas to assess the degree of citizen participation and its driving factors.

6. Conclusions

The descriptive and inferential analyses showed that the current level of citizen participation is higher than merely receiving information, and the peri-urban residents had higher participation than the urban residents. It also indicated that young people were rarely involved in the PP although they were recognized as the nation's future. The regression analysis revealed that the degree of PP was related to residential location, age, income, occupation, and the duration of residence. The interviews reflected the importance of strategies and tools for each participation stage. Since the participants were able to articulate their interests and they were satisfied with the participation process. These findings shed light on how the PP process can be improved to enhance citizen involvement in infrastructure planning.

The significant findings related to influential sociodemographic factors and citizen participation should be used to design interventions to enhance citizen participation. For example, the local government administration and PP organizer should pay attention to citizen segments such as youth, seniors, low- and high-income people, peri-urban dwellers, and short-term and long-term residents, who may need increased engagement to be meaningfully involved in public hearings. In addition, affected citizens in urban and peri-urban areas had different sociodemographic backgrounds; the peri-urban group had a larger proportion of less-educated, unemployed, and low-income people, which would necessitate a different approach to PP, compared to urban citizens. The local government and PP organizers should design sessions to raise awareness among specific subgroups. Moreover, interactive pre-communication sessions on infrastructure project development should be provided, especially for peri-urban residents, to build their capacity for knowledge and communication skills prior to attending PP activities.

This study had several limitations. First, it was carried out in consideration of Thailand's cultures and traditions, which may differ from those of other countries. Second, the research was conducted in the context of the PPP mechanism, in which economic benefits and opportunities are vital conditions. The implications may differ from other PP processes with different tools. Third, factors of participation were analyzed with a focus on sociodemographic attributes.

Future research should examine other dimensions of factors that may influence PP, such as the participation process, as well as environmental, political, and governance elements to improve PP quality. These factors seem to be an important research agenda for studies in parallel with the global trend of creating inclusive, safe, resilient, and sustainable cities.

Author Contributions: P.P.: Conceptualization, research design, investigation, data curation; formal analysis, visualization, writing—original draft; writing—review and editing. T.P.L.N. and D.S.S.: conceptualization, data interpretation, structure-original draft, validation and supervision. P.P., T.P.L.N., D.S.S., V.N., T.W.T.: review and editing. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by the Royal Thai Government Fellowship and the Asian Institute of Technology Fellowship.

Institutional Review Board Statement: Institutional Review Board Statement: Formal ethical review and approval were waived for this study as the respondents are Thai citizen in general. The respondents are not a minority, underage or vulnerable groups (HIV persons, refugees).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author. The data are not publicly available due to the privacy of respondents.

Acknowledgments: All the respondents who gave up their time for interviews and questionnaire surveys are gratefully acknowledged.

Conflicts of Interest: The authors declare no conflict of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

Appendix A

Table A1. Participation indicators.

Indicator	Participation Pattern	Typology by Arnstein
The stakeholders initiate or propose topics of discussion and may share decisions with authority.	8. Citizen control	Citizen Power
The stakeholders may direct and co-facilitate PP activities. The issues and topics are well-explained prior to the activities.	7. Delegate power	
The stakeholders are part of a working group or committee involved with project development from design to implementation.	6. Partnership	
The stakeholders can advise and even plan, but it is the power-holder that finally decides whether to even take these ideas into account or not.	5. Involvement	Tokenism
The stakeholder provides opinions on issues and simple consulting on the decision process. The issues and decision process are not explained in advance.	4. Consultation	
The stakeholders are informed and aware of the project goals. It is a two-way communication process. The citizen learns from the officers and the officers learn from the citizen.	3. Inform	
The local officers lead activities with the main goal of disseminating information to stakeholders. Stakeholders are part of the events without any input and not much understanding about the issues.	2. Passive participation	Non-participation
Stakeholders who affected by the project; however, they do not attend the public participation activity.	1. Non-attendance	

Table A2. Variance inflation factors (VIFs) for the independent variables in the ordinal regression analysis.

		X2	X3	X4	X5	X6	X7
X1	Tolerance	0.97	0.57	0.86	0.91	0.94	0.57
	VIF	1.04	1.77	1.16	1.1	1.07	1.76
X2	Tolerance		0.54	0.86	0.92	0.9	0.5
	VIF		1.86	1.16	1.09	1.12	2.02
X3	Tolerance			0.87	0.96	0.89	0.8
	VIF			1.16	1.05	1.13	1.25
X4	Tolerance				0.91	0.92	0.51
	VIF				1.1	1.08	1.96
X5	Tolerance					0.89	0.49
	VIF					1.13	2.03
X6	Tolerance						0.49
	VIF						2.03
X7	Tolerance						
	VIF						

References

- Aijaz, Rumi. 2019. India's Peri-Urban Regions: The Need for Policy and the Challenges of Governance. *ORF Issue Brief* (Observer Research Foundation) 285. Available online: <https://www.orfonline.org/research/india-peri-urban-regions-need-policy-challenges-governance-49274/> (accessed on 1 February 2023).
- Arnstein, Sherry R. 1969. A Ladder Of Citizen Participation. *Journal of the American Institute of Planners* 35: 216–24. [CrossRef]
- Baum, Frances E., Robert A. Bush, Carolyn C. Modra, Charlie J. Murray, Eva M. Cox, Kathy M. Alexander, and Robert C. Potter. 2000. Epidemiology of participation: An Australian community study. *Journal of Epidemiology & Community Health* 54: 414–423. [CrossRef]
- Brown-Iannuzzi, Jazmin L., Kristjen B. Lundberg, and Stephanie McKee. 2017. The politics of socioeconomic status: How socioeconomic status may influence. *Current Opinion in Psychology* 18: 11–14. [CrossRef] [PubMed]
- Chaisomphob, Tawee, Jaturong Sa-nguanmanasak, and Kanokporn Swangjang. 2015. Role of Public Participation in Planning Power Plant Project in Thailand. *Thammasat International Journal of Science and Technology* 9: 67–73.
- Chutarat, Chompunth. 2017. Role of public participaiton in environmental impact assessement in Thailand. *International Journal of GEOMATE* 12: 109–13. [CrossRef]
- Creswell, John W. 2015. *A Concise Introduction to Mixed Methods Research*, 2nd ed. New York: SAGE.
- Creswell, John, and Amanda Garrett. 2008. The “movement” of mixed methods research and the role of educators. *South African Journal of Education* 28: 321–33. [CrossRef]
- Daniel, Kristie. 2015. Goal 11—Cities Will Play an Important Role in Achieving the SDGs. United Nation. Apr. Available online: <https://www.un.org/en/chronicle/article/goal-11-cities-will-play-important-role-achieving-sdgs> (accessed on 1 February 2023).
- Gaber, John. 2020. Building “A Ladder of Citizen Participation”. In *Learning from Arnstein's Ladder From Citizen Participation to Public Engagement*. New York: Routledge. [CrossRef]
- Hart, Roger A. 1979. *Children's Participation from Tokenism to Citizenship*. New Brunswick: Elise Boulding.
- Hingels, Anders, Andrea Saltelli, Anna Rita Manca, Massimiliano Mascherini, and Bryony Hoskins. 2009. Growing Cohesive Societies: The Characterization of Active Citizenship. In *The 3rd OECD World Forum on “Statistics, Knowledge and Policy” Charting Progress, Building Visions, Improving Life*. Busan: OECD. Available online: <https://www.oecd.org/site/progresskorea/44120679.pdf> (accessed on 1 February 2023).
- Huang, Zhengdong. 2003. *Data Integration For Urban Transport Planning*. Utrecht: Utrecht University.
- International Finance Corporation—Worldbank Grou. 2019. *A Guide to Community Engagement for Public-Private Partnership*. Draft for Discussion. Washington DC: Worldbank.
- Jennings, Ray Salvatore. 2000. Participatory Development as the New Paradigm: The Transition of Development Professionalism. In *Community Based Reintegration and Rehabilitation in Post-Conflict Settings*. Washington, DC: USAID, pp. 20–21.
- Kamnuansilpa, Peerasit, Sirisak Laochankham, Charles David Crumpton, and John Draper. 2020. Citizen Awareness of the Smart City: A Study of Khon Kaen, Thailand. *The Journal of Asian Finance, Economics and Business [Internet]*, 497–508. [CrossRef]
- Kang, Naewon, and Nojin Kwak. 2003. A Multilevel Approach to Civic Participation: Individual Length of Residence, Neighborhood Residential Stability, and Their Interactive Effects With Media Use. *Communication Research* 30: 80–106. [CrossRef]
- Kantamaturapoj, Kanang, Ganda Piyajun, and Suwit Wibulpolprasert. 2020. Comparison of Public Participation in Environmental and Health Impact Assessment between Thailand and other countries. *Journal of Politics and Governance* 10: 108–26.
- Khon Kaen City Development Co., Ltd. n.d. Khon Kaen Smart City Project. Available online: <https://www.khonkaenthinktank.com/project.php> (accessed on 10 January 2020).
- Lao, Rattana, Thomas I Parks, and Charn Sangvirojkul. 2019. *Thailand's Inequality: Myths & Reality of ISAN*. Bangkok: The Asia Foundation.
- Litman, Todd Alexander. 2022. Introduction to Multi-Modal Transportation Planning. *Victoria Transport Policy Institute*, 6–19. Available online: https://www.vtpi.org/multimodal_planning.pdf (accessed on 28 February 2023).
- Litman, Todd Alexander. 2011. Measuring transportation: Traffic, mobility and accessibility. *Social Research in Transport (SORT) Clearinghouse* 73. Available online: <https://www.vtpi.org/measure.pdf> (accessed on 28 February 2023).
- Maarseveen, Raoul Van. 2021. The urban rural-education gap: Do cities indeed make us smarter? *Journal of Economic Geography* 21: 683–714. [CrossRef]
- MacDonald, Richard. 2021. Introduction: The Khon Kaen Model and Light Rail Transit. *waymagazine.org*. May 13. Available online: <https://waymagazine.org/conjuring-the-people-entrepreneurial-localism-and-the-case-of-the-khon-kaen-model/> (accessed on 28 February 2022.).
- Macrotrends. 2023. Khon-Kaen, Thailand Metro Area Population 1950–2023. Available online: <https://www.macrotrends.net/cities/22620/khon-kaen/population> (accessed on 5 January 2023).
- Manowong, Ektewan, and Stephen O. Ogunlana. 2023. Public hearings in Thailand's infrastructure projects: Effective participations? *Engineering, Construction and Architectural Management* 13: 343–63. [CrossRef]
- Mason, Jennifer. 2006. Mixing methods in a qualitatively driven way. *Qualitative Research*, 9–25. [CrossRef]
- Maurice, Nyarangaa, Hao Chen, and Hongo Duncan. 2021. The Role of Public Participation in Governance towards Achieving Sustainable Development. Part 1. *RUDN Journal of Public Administration* 8: 395–404. [CrossRef]
- Mbithi, Antony, Damiana Ndambuki, and Fredrick Juma. 2018. Determinants of Public Participation in Kenya County Governments. *Journal of Asian and African Studies* 54. [CrossRef]

- Modeni, Sibanda, and Liezel Lues. 2021. Public participation power dynamics in strategic development planning in a metropolitan municipality: Eastern Cape Province. *Journal of Local Government Research and Innovation* 2. [CrossRef]
- National Centre for Research Method. n.d. 5.3 Key Assumptions of Ordinal Regression. Available online: <https://www.restore.ac.uk/srme/www/fac/soc/wie/research-new/srme/modules/mod5/3/index.html#:~:text=The%20key%20assumption%20in%20ordinal,but%20it%20T1%20textquoterights%20the%20same%20thing> (accessed on 9 November 2022).
- Ng, S. T., J. M. W. Wong, and K. K. W. Wong. 2010. Public participation in public private partnership projects - The way forward. *The Sustainable World* 142: 79–87. [CrossRef]
- Ng, Thomas, Terry Li, and James Wong. 2012. Rethinking public participation in infrastructure projects. *Municipal Engineer* 165: 101–13. [CrossRef]
- NordNordWest. 2009. Thailand Khon Kaen Locator map.svg. Available online: https://th.m.wikipedia.org/wiki/%E0%B9%84%E0%B8%9F%E0%B8%A5%E0%B9%8C:Thailand_Khon_Kaen_locator_map.svg (accessed on 1 February 2022).
- Nyama, Vellim, and Geoffrey Mukwada. 2022. Factors Affecting Citizen Participation in Local Development Planning in Murewa District, Zimbabwe. *Journal of Asian and African Studies*. [CrossRef]
- Pancho, Quita. 2014. Infrastructure Planning and Management. *Lecture*, July 11. Available online: <https://www.slideserve.com/ghita/infrastructure-planning-and-management> (accessed on 9 November 2022).
- Papaoikonomou, Antonis. 2021. An ordinal logistic regression model on civic education usefulness in Greece: Empirical research in a sample of university students. *HuSS International Journal of Research in Humanities and Social Sciences* 9: 18–25.
- Quick, Kathryn S. 2018. The Narrative Production of Stakeholder Engagement Processes. *Journal of Planning Education and Research* 41: 326–41. [CrossRef]
- Quintelier, Ellen. 2007. Differences in political participation between young and old people. *Contemporary Politics* 13: 165–80. [CrossRef]
- Read, Geoffrey. n.d. *Disaster Risk Management in East Asia and the Pacific*. The World Bank. Washington, DC: EAP DRM KnowledgeNote. Available online: <https://openknowledge.worldbank.org/bitstream/handle/10986/10129/529390BRI0REVI10BOX353820B01PUBLIC1.pdf?sequence=1&isAllowed=y> (accessed on 9 November 2022).
- Relph, Edward. 2008. *Place and Placelessness*, Relph, Edward. Toronto: SAGE Publications Ltd. [CrossRef]
- Rocha, Elizabeth M. 1997. A Ladder of Empowerment. *Journal of Planning Education and Research* 17: 31–44. [CrossRef]
- Shea, Daniel M. 2015. Young Voters, Declining Trust and the Limits of “Service Politics”. *The Forum* 13: 459–79. [CrossRef]
- Sinclair, A John, and P Alan Diduck. 2017. Reconceptualizing Public Participation In Environmental Assessment As EA Civics. *Environmental Impact Assessment Review* 62: 174–82. [CrossRef]
- Siroros, Patcharee, and Kenneth J Haller. 2015. Thai Public Hearings: Smokescreen or Ceremony? *TU Review* 5: 147–64.
- STATISTICS HELP. n.d. STATISTICS HELP. Available online: https://www.stathelp.se/en/dummy_en.html (accessed on 2 December 2022).
- Sudhipongpracha, Tatchalerm, and Bharat Dahiya. 2019. City Profile: Khon Kaen, Thailand. *Environment and Urbanization ASIA* 10: 271–89. [CrossRef]
- Sustainable World. 2019. Demographic Characteristics: An Important Part of Science. July 13. Available online: <https://worldsustainable.org/demographic-characteristics/> (accessed on 27 June 2022).
- The Analysis Factor. n.d. How to Decide between Multinomial and Ordinal Logistic Regression Models. Available online: <https://www.theanalysisfactor.com/decide-between-multinomial-and-ordinal-logistic-regression-models/> (accessed on 10 November 2022).
- Thananithichot, Stithorn. 2012. Political engagement and participation of Thai citizens: The rural–urban disparity. *Contemporary Politics* 18: 87–108. [CrossRef]
- Toruńczyk-Ruiz, Sabina, and Borja Martinović. 2020. The bright and dark sides of length of residence in the neighbourhood: Consequences for local participation and openness to newcomers. *Journal of Environmental Psychology* 67. [CrossRef]
- Tupmongkol, Piyamart, and Achakorn Wongpreedee. 2022. Public and private partnership in khon kaen urban development as a smart city: A case study of light rail transit (lrt) construction project. *Journal of Graduate Studies Valaya Alongkron Rajabhat University* 16. [CrossRef]
- UKEssays. 2018. Transportation Planning And Urban Form Environmental Sciences Essay. Available online: <https://www.ukessays.com/essays/essays/environmental-sciences/transportation-planning-and-urban-form-environmental-sciences-essay.php?vref=1> (accessed on 29 June 2022).
- Wangwongwatana, Supat, Daisuke Sano, and Peter Noel King. 2015. *Assessing Environmental Impact Assessment (EIA) in Thailand: Implementation Challenges and Opportunities for Sustainable Development Planning (Working Paper)*, Asian Environmental Compliance and Enforcement Network (AECEN) Working Paper Asian Environmental. Hayama: Institute for Global Environmental Strategies.
- Wiyaboon, Saowanee. 2019. Community Participation in Local Development Projects. *Journal Of International Buddhist Studies College (JIBSC)* 4: 18–24.
- Yang, Yuze, and Lin Ye. 2020. Peri-Urban Development. *Oxford Bibliographies in Urban Studies*. [CrossRef]

Disclaimer/Publisher’s Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.