Relationship of the Relocation Decision and Job Location of Klong Toei Community's Residents

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ความสัมพันธ์ของการตัดสินใจย้ายถิ่นฐานและสถานที่ทำงานของชาวชุมชนคลองเตย

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ชูชวัน ทัง : ความสัมพันธ์ของการตัดสินใจย้ายถิ่นฐานและสถานที่ทำงานของชาวชุมชนคลองเตย. (Relationship of the Relocation Decision and Job Location of Klong Toei Community's Residents) อ.ที่ปรึกษาหลัก : รศ. สุธี อนันต์สุขสมศรี

งานวิจัยนี้ศึกษาความสัมพันธ์ระหว่างที่ตั้งของงานและความเต็มใจในการย้ายถิ่นฐานของผู้อยู่อาศัยในชุมชนแออัด โดยใช้ชุมชนคลองเตยในกรุงเทพมหานครเป็นกรณีศึกษา ชุมชนแออัดมักเกิดขึ้นจากกระบวนการกลายเป็นเมืองได้และการเจริญเติบโตของเศรษฐกิจอย่างรวดเร็ว โดยเฉพาะในประเทศกำลังพัฒนา โดยชุมชนคลองเตยได้เกิดขึ้นในบริเวณโดยรอบของการท่าเรือแห่งประเทศไทย และกลายเป็นชุมชนแออัดขนาดที่ใหญ่ที่สุดในกรุงเทพมหานคร ในช่วงหลายปีที่ผ่านมา การท่าเรือได้พยายามเรียกคืนที่ดินจากชุมชนคลองเตย โดยเสนอทางเลือกในการย้ายถิ่นอาศัยให้แก่ชาวชุมชน แต่การดำเนินงานนั้นต้องเผชิญกับอุปสรรคต่าง ๆ เนื่องจากมีผู้อยู่อาศัยหลายคนกลัวการย้ายออกไปจากพื้นที่อยู่อาศัยและกังวลเกี่ยวกับผลกระทบต่องานและอาชีพของพวกเขา

งานวิจัยนี้ใช้ระเบียบวิธีวิจัยเชิงปริมาณและเชิงคุณภาพในการศึกษาความสัมพันธ์ระหว่างที่ตั้งของงานและปัจจัยที่ส่งผลต่อความเต็มใจในการย้ายถิ่นฐาน งานวิจัยใช้การวิเคราะห์ความสัมพันธ์เชิงพื้นที่ การทดสอบไคสแควร์ การวิเคราะห์คลัสเตอร์ จากข้อมูลที่ได้จากแบบสอบถามและการสัมภาษณ์ของคนในชุมชน 3 ประเภทในชุมชนคลองเตย ได้แก่ ชุมชนล็อก 1-2-3 4-5-6 ชุมชน 70 ไร่ และชุมชนแฟลต

ผลการศึกษาแสดงให้เห็นว่า ที่ตั้งของงานของคนในชุมชนมีความสัมพันธ์เชิงพื้นที่แบบการกระจายตัวแบบสุ่ม และการทดสอบไคสแควร์แสดงให้เห็นว่าที่ตั้งของงานกับความเต็มใจในการย้ายถิ่นฐานมีความสัมพันธ์อย่างมีนัยสำคัญทางสถิติ ผลจากการสัมภาษณ์ได้แสดงให้เห็นถึงผลของตัวแปรระยะห่างของช่วงอายุ ระยะทางถึงที่ทำงาน และประเภทของงาน ต่อการตัดสินใจในการย้ายที่อยู่อาศัย นอกจากนั้นผลของการวิเคราะห์คลัสเตอร์ยังชี้ให้เห็นว่าคุณลักษณะของผู้อยู่อาศัยกับการตัดสินใจในการย้ายที่อยู่อาศัย ซึ่งเป็นผลการศึกษาที่สามารถใช้เป็นองค์ประกอบในการวางแผนในการย้ายถิ่นฐานของชุมชนในอนาคต งานวิจัยนี้ได้สร้างความเข้าใจในพลวัตที่ซับซ้อนของความสัมพันธ์ระหว่างที่ตั้งของงานและความเต็มใจในการย้ายถิ่นฐานของผู้อยู่อาศัยในชุมชนแออัด ผลของงานวิจัยนี้จะเป็นประโยชน์กับนักวางแผนเมือง ผู้กำหนดนโยบาย และผู้ที่มีส่วนเกี่ยวข้องในการจัดการชุมชนแออัดและการพัฒนาพื้นที่ที่ส่งผลกระทบต่อยุทธศาสตร์ในการเคลื่อนย้ายผู้อยู่อาศัย

สาขาวิชา	ยุทธศาสตร์เมือง	ลายมือชื่อนิสิต .....
ปีการศึกษา	2565	ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

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KEYWORD: Urban informal settlement, Job location, Willingness to relocate, Spatial Autocorrelation, Cluster analysis

Shu Hsuan Tang : Relationship of the Relocation Decision and Job Location of Klong Toei Community's Residents. Advisor: Assoc. Prof. Sutee Anantsuksomsri, Ph.D.

This study investigates the relationship between job location and the willingness to relocate of informal settlement residents, using the Klong Toei community in Bangkok as a case study. Informal settlements have emerged due to urbanization and rapid economic growth, especially in developing countries. The Klong Toei community, which has evolved around the Port Authority of Thailand, has become the largest informal settlement in Bangkok. The port authority has tried to reclaim the land occupied by the community and provide relocation options to residents. However, the relocation process encounters challenges as many residents fear losing their livelihoods and express concerns about the impacts on their work and jobs.

The study utilizes quantitative and qualitative research methods to examine the relationship between job location and factors influencing residents' willingness to relocate. The research employs Spatial autocorrelation, Chi-square test, and Cluster analysis using data from questionnaire surveys and interviews in three types of settlements within the Klong Toei community: Lock 1-2-3, 4-5-6, 70-rai, and flat communities.

The findings reveal that residents' job location exhibits spatial independence showing random distribution, and the chi-square test indicates a statistically significant relationship between job location and willingness to relocate. The interviews highlight the influence of generation disparity, distances of job location, and job types on residents' decisions to relocate. Furthermore, Cluster analysis identifies distinct resident profiles and the decision to relocate, providing valuable insights for future resettlement policymaking. This research contributes to understanding the complex dynamics between job location and willingness to relocate of informal settlement residents. The findings have implications for urban planners, policymakers, and stakeholders involved in addressing the challenges of informal settlements and developing effective relocation strategies.

Field of Study:	Urban Strategies	Student's Signature .....
Academic Year:	2022	Advisor's Signature .....

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In the context of place cognition in Bangkok, it is often deemed the district you live in, the people who you are. Hence, I am a nine years Klong Toei people. No wonder the topic selection is supposed to be my neighbor Klong Toei people; in a parallel world, scarcity of characterization has been narrated. It may be an exhilarating moment, perhaps the last era of poverty on the road to rapid urban development, an event that is swallowed up for the time being. However, interacting with hundreds of people profoundly, I glimpse no longer the emphasized poverty but the simplicity and innocence in the micro-society, the Klong Toei community. There is no dialogue about social status but more on the uncertainty of the future. Some are ready, while others remain for that day to arrive and then act. Special thanks to the agreement of the 90 respondents from their hesitation then consent to cooperate with the interview survey make this study remarkable.

I am grateful to have Dr. Sutee Anantsuksomsri as my supervisor for his generality in giving direction, vision, and support in the progress of learning till the thesis completion. Likewise, sparkling comments from Dr. Nattapong Punnoi and Dr. Nattapong Puttanapong are given another perspective to improve the coverage and depths of this research. Meanwhile, I am thankful for my kind peer Miss. Brendah Kyaterekera reviews the thesis proposal and gives valuable comments. Moreover, Mr. Atikrit Chanjavanakul's assistance in translating the questionary into Thai provided a comprehensive understanding of the questions for the survey, directing the opportunity to interact with residents for further discussion. Most importantly, encouragement from my lovely parents is always integral to moving forward in the learning journey.

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Chapter 1 Introduction

Since the mid-20th century, impoverished migrant workers have resettled from rural to urban areas for better job opportunities and stable earnings. Meanwhile, cities provide informal employment opportunities for economic development, leading to urbanization in many developing countries. Consequently, the rapid growth of informal settlements is caused by urbanization and population growth, which also triggers the disequilibrium supply housing market (Haddad et al., 1999). As a result, informal settlement in developing countries worldwide can be attributed to the transition phenomenon brought about by urbanization and rapid economic growth (Badmos et al., 2020; Marx et al., 2013). According to United Nations (2018), the number of people living in slums or informal settlements has increased by more than 1 billion from the previous estimate of 300 million. More than 80% of this figure comes from three regions, where are 370 million in East and South-East Asia, 238 million in Sub-Saharan Africa, and 227 million in Central and South Asia. According to the world bank, in 2018, informal dwellers accounted for 24% of the total population in Thailand, and 579,603 people lived in informal settlements in Bangkok (Pongutta et al., 2021).

On the policy to mitigate slums in Thailand since the 1970s, Viratkapan and Perera (2006) indicate the policy of giving security tenure for low-income groups, in which the governmental implementation strategies primarily focus on land sharing, re-blocking, reconstruction, and relocation. Further, a successful land-sharing scheme includes board cooperation with community organizations, a land-sharing agreement, densification, reconstruction, and capital investment. However, Kamalipour (2016) declares that “an underlying logic is constant to the emergence and development of informality in which informal forms may appear random and chaotic in the Klong Toei community.” Based on social hierarchy in the community, DiNino et al. (2006) point out that the residents often determine who remains part of the land-sharing agreement and who should leave. Nevertheless, rental housing for low-income households can address the lack of land tenure, but it is often plagued with problems, including overcrowding and inadequate maintenance.

The government sector National Housing Authority (NHA) was established in 1973 to address urban poverty and scarcity of housing demands for low-income groups and is mainly in charge of providing affordable apartments for low-income households. Between 1978 and 1991, the NHA upgrade 132 slums housing 51,000 households in Thailand. Unfortunately, it is doomed to failure because many projects are being built far away from the city, and those approaches need more support from politicians (Yap & De Wandeler, 2010). According to a survey by the NHA for housing and human settlements in 1990 (Figure 1), job considerations and insufficient income are the most severe problems faced by residents living in informal settlements, accounting for 26% (Bhatkal & Lucci, 2015). Since then, the Thai government launched the Baan Mankong program in 2003 (Boonyabancha, 2005b). It has successfully solved the issue of housing renovation in slums across Thailand through government subsidies and a series of professional and systematic management. Furthermore, CODI, the government agency in charge, proposes a housing environment improvement plan for the largest informal settlement in Bangkok, the Klong Toei community. The final plan, however, has been shelved because of difficulties communicating with community leaders, according to the personal communication with a CODI architect, and the other planned commercial development goals.

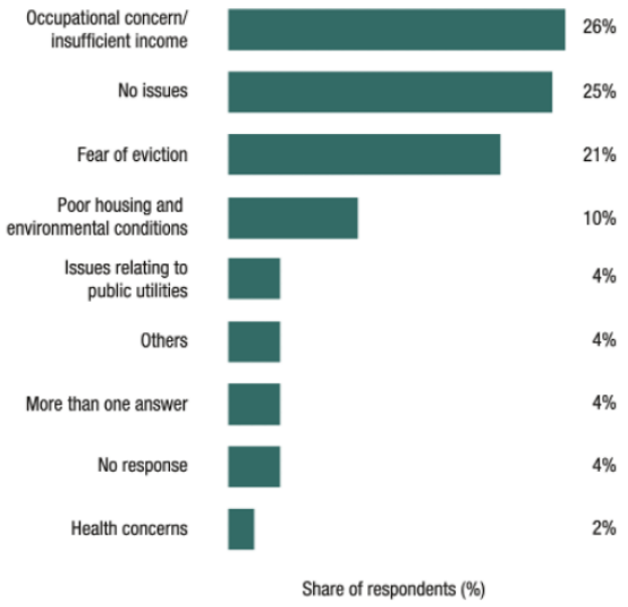

Figure 1 People living in slums faced the most severe issues surveyed by the National housing authority in 1990. Source: Bhatkal and Lucci (2015).

The necessities of human existence are indispensable housing and livelihood. Nevertheless, with the rapid economic development and the continuous expansion of the urban scale, many residents living in informal settlements illegally on public or private land often be distressed about eviction by landlords. As a result, particularly low-income groups in urban cities face precarious housing problems. Regardless, disadvantaged groups are less likely to save earnings from securing housing demands due to precarious income and the rising cost of living. Given this, the assumption seems superficial in the government and institutions' view because the information received may be limited or from a unitary aspect.

Therefore, from literature related to the Klong Toei community in the past and conversations with locals during the site survey, employment opportunity is likely to play a vital role in directing the dwellers' willingness to relocate. Hence, this study aims to find the crux of the situation through face-to-face interviews with residents by listening to their voices, opinions, and notions to comprehend the informal settlement residents' willingness to relocate. Ultimately, the results obtained from the analysis intend to be transformed into a full regard for the relevant governmental institutions and stakeholders in the resettlement planning procedure.

1.1 Informal settlement of Klong Toei community

The Klong Toei community is the largest informal settlement in Bangkok, Thailand, comprising 26 sub-communities on land belonging to the Port Authority of Thailand. It is located on the banks of the Chao Phraya River in southern Bangkok, covering an area of 1.5 square kilometers (Figure 2). Dates to the history of the Klong Toei community (DiNino et al., 2006), in 1951, the government enacted the Port Authority of Thailand Act B.E. 2494 to establish the Port Authority of Thailand as a state-owned enterprise under the Ministry of Transportation (Port Authority of Thailand, 2018). The Khlong Toei Port is Thailand's main port for sea cargo transportation; it was constructed in 1938 and completed after World War II. Due to limited capacity and transit traffic congestion, many of its shipping operations shifted to Laem Chabang Port in Chonburi province in the 80s. Till now, the informal settlement built on land belonging to the Port Authority of Thailand (PAT) is home to approximately 85,000 to 100,000 people.

Due to the construction of the Port of Thailand, migrants from impoverished rural areas in the northeast influx to Bangkok and move to temporary housing near the port for better income and quality of life. In addition, some workers employed by the Port Authority of Thailand chose to remain in temporary communities after completing their work. At the same time, with the completion of the port, immigrants can find jobs in the port or nearby refineries while the step away Klong Toei market offers farmers selling their products or becoming street vendors as their livelihood resource. In the wake of late 1960, the United States planned to establish a military base in Thailand, a stronghold for the Vietnam War. Thus, the Port of Port Authority Thailand is responsible for receiving and delivering ordnance, including receiving the corpses of soldiers to send back to the U.S.A. Moreover, the U.S. military requires workers to build military bases that create job opportunities for people in provinces near Bangkok who flock to it and believe that the opportunity brought by the U.S. military bases can earn profitable revenue (Kumpetch, 2022).

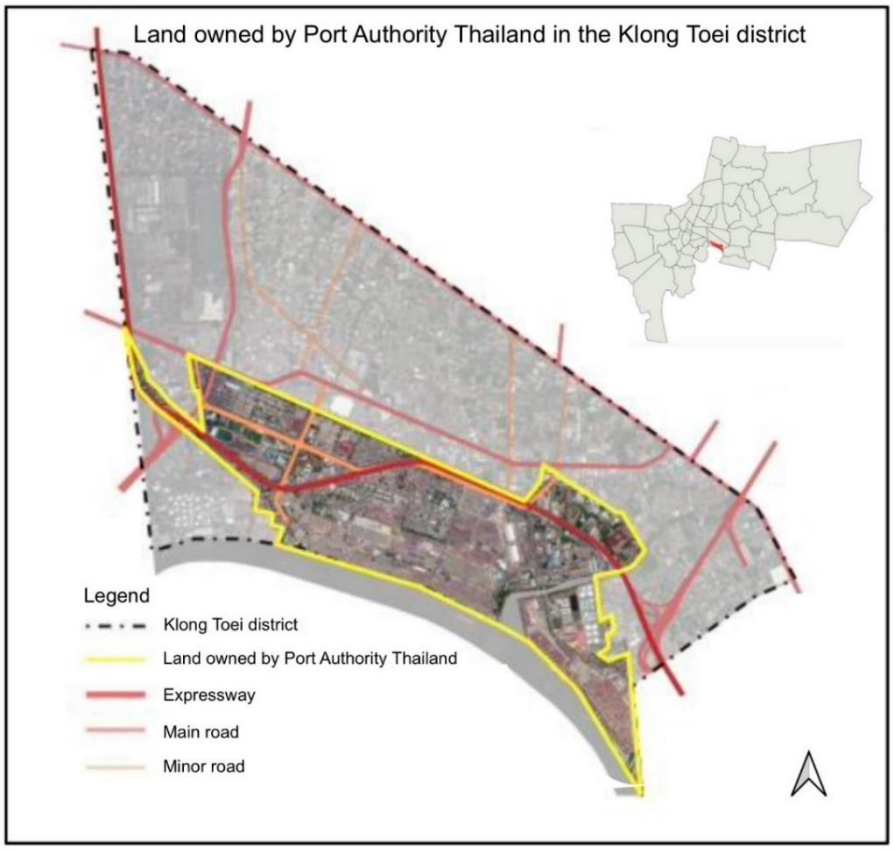

Figure 2 Land owned by PAT in the Klong Toei district. Source: Adapted from Ferrero et al. (2018).

Previously, in 1973, the government established the National Housing Authority (NHA), intending to develop rental apartments for low-income households nationwide (Yap & De Wandeler, 2010). However, PAT requires land to build a container terminal leading to 1,780 households in the Klong Toy Lock 7-12 at the Port of Bangkok and Mubanpattana areas that have to be evicted. Since then, NHA has intervened in the eviction and proposed the Klong Toei family resettlement plan, which PAT initially rejected. In 1985, following the actions of community organizations with support from NGOs and under political pressure from the government and the king, the PAT agreed to a land-sharing arrangement (Islam & Sheng, 1989). To reach a compromise with the residents, those affected by the eviction are resettled on an adjacent piece of land established in 1994 by former Lock 7-12 residents. Thus, the Chum Chon Moo Baan Pattana Jed Sib Rai (70 Rai) community is inhabited by 1,183 households with approximately 9,000 residents (Goodwin et al., 2015) and grants a land lease for 25 years (Berner & Korff, 1995).

Many serious eviction threats occur during the relocation process of Khlong Toey Lock 7-12. However, some residents believe that the government respects their investment in building new houses and that they will only be evicted with substantial compensation (Archer, 2010). Furthermore, compared with the infrastructure and living environment in the early years, such as the water and electricity scarcity, the current Klong Toei community has satisfied primary environmental living conditions. Nevertheless, as the land lease is about to expire, in recent years, PAT has strategies to develop its land into a smart community for large-scale commercial development (Albright et al., 2011), which has provoked community residents under pressure to relocate.

1.2 Problem statement

Over decades, the Klong Toei community's environment has improved, but the global pandemic of 2019 once again brought the Klong Toei community into the spotlight of social matters. Although the epidemic poses a health threat to everyone, especially living in the urban city, following the social distancing guidelines for the Klong Toei community living in a high-density population is unavoidably attacked by the epidemic. It becomes the government's priority task to control the epidemic spreading. This event also reveals that when epidemic diseases occur, excessive population aggregation in informal

settlements makes it complex and somewhat challenging to prevent the spread of diseases. Meanwhile, social perceptions generally discriminate against slums. For example, due to the media's exaggeration of negative news and prejudice about crime, violence, and drug abuse, informal settlement has often become a social problem in the progress of urban development.

Recently, the PAT has requested land reclamation to expand Bangkok University's educational campus according to information from the meeting with Duang Prateep Foundation (Personal communication, 2022) and other economic development, such as the government's plan to develop a smart community. Therefore, the PAT offers residents three options: 1). 33 sqm apartment on Soi Trimit, which is 2km away from the current location. 2). Eighty square meters of land in the Nong Chok district in the suburbs. 3). cash compensation (Ferrero et al., 2018). In response to these compensations, residents express different concerns. For example, a 33-square-meter apartment cannot fulfill the living space requirements of a two-generation family, and residents who sell in street stalls may lose their source of livelihood. Even if the land can meet the space requirements, the prerequisite is that it is likely impractical for the residents to bear the cost of land preparation and house construction. Besides these issues, suburban employment opportunities are few, and educational institutions and living facilities need to be improved. Most importantly, people's livelihood matters must be tackled and resolved. Likewise, monetary compensation depends on various individual economic backgrounds. Some residents stated that despite receiving funds, they still face housing problems due to heightened housing prices.

The Ministry of Transportation and PAT envision upgrading the site into smart communities to stimulate the local economy and ameliorate residents' quality of life (Port Authority Thailand, 2019). Some residents accept the compensation, yet some still bargain with relevant departments to assist in building houses in the Nong Chok district. As a result, this has led to obstacles in urban development and the upgrading of the residents' environment. According to the on-site survey in March 2022, some residents say the low rental is critical to settling here. Moreover, some express that the convenience of being close to workplaces is the most prominent reason they are reluctant to move out. This divergence makes residents focus better on the job location than merely selecting compensations or a new home. Given this, an effort must be strengthened between the PAT proposed plan and residents' livelihood considerations.

1.3 Research objectives

The aim of this study is threefold.

1. To explore the cluster and map of job locations of Klong Toei residents.

2. To study the relationship of job locations between Klong Toei residents' willingness to relocate.

3. To identify the attributes of residents related to relocation decisions.

1.4 Research questions

The willingness to relocate is complex due to the variety of considerations in each individual or depending on the household's socioeconomic situation. Therefore, the research question arises:

1. What is the relationship between residents' job locations and the factors affecting residents' willingness to relocate?

2. What kind of characteristics of residents led to the relocation decision?

3. What types of jobs possess a higher willingness to relocate?

1.5 Hypothesis

H1. Residents' Job location is likely spatially clustered and the significant factor affecting residents' willingness to relocate.

H2. The generation disparity, job location, and type of job play an influential role in directing the relocation decision.

H3. Residents who work mobile jobs are more willing to relocate due to flexibility in job locations.

1.6 Scope of the study

This study is carried out in 50 districts in Bangkok to explore the cluster of the residents' job location in three communities in Klong Toei and focus primarily on the job location and the factors contributing to the willingness to resettlement. Figure 3 illustrates the location of three selected Klong Toei communities. It is deliberately chosen as the study site as it has a high density of residents and contains different cultures, walks of life, and economic sub-categories of informal settlement communities, which divide into informal settlements (Lock 1-2-3 & 4-5-6), subdivisions (70 Rai), and four stories of height Flat as the survey area. Describe the attribute of each community specifically; for example, Lock is an unplanned settlement (Atitruangsiri, 2017). Conversely, 70 Rai is a planned area designed and cooperated by the Port Authority of Thailand while relocating residents from a previous informal site, Lock 7-12, in the early 90s. At the same time, the Port Authority of Thailand builds Flats for relocating slum dwellers and renting purposes.

Figure 3 Location of selected sub-communities in Khlong Toei

1.7 Contribution of the study

Since the Thai government and the Ministry of Transportation are promoting the land occupied by informal settlements in the Klong Toei community into a smart community, there are some debates that commercial projects create the phenomenon of gentrification and threaten the living rights of low-income groups in the inner city. Simultaneously, it is undeniable that gentrification likewise brings increased revenue to landowners. However, it is complex that housing subjects may need to cooperate with many authorities and stockholders rather than merely count on the landowner itself. Despite desiring to utilize the land value and upgrade the environment for commercial development, it is not snatching residents' livelihoods but a prospect to facilitate a substitution and compensation for residents for a better living environment. Besides, residents are supposed to benefit from the relocation plan, which releases tremendous job opportunities from urban expansion. Consequently, this research investigates the bust-up status through face-to-face interviews with residents and seeks to clarify the factors that affect the residents' willingness to relocate. This examination anticipates being combined into the agenda when governmental institutions and stakeholders inspect resettlement plans.

1.8 Organizations of the study

This paper is structured as follows: Section 1 consists of the introduction of the informal settlement of the Khlong Toei community, the problem statement, the research objective, the research question, the hypothesis, and the scope of the study, followed by Section 2, literature review in two dimensions into slum resettlement, and theoretical relocation decision, literature findings, then summary on methodology; Section 3 draws the methodology, procedures of research methods, data collection, and data collection guide, quantitative and qualitative analytical methods, variables; Section 4 demonstrates a description of the data set and qualitative findings of interviewees while Section 5 gives analytical results and interpretation of the results. Lastly, Section 6 delivers the summary findings, discussion, and conclusion, followed by limitations of the study and recommendations for future study.

Chapter 2 Literature review

This chapter draws on the literature review into four sections. The first section cover slum resettlement to describe two aspects of social capital and life cycle, while the second section review theoretical relocation decision into two dimensions job accessibility and transportation. The third section delivers the findings from literature reviews, while the fourth section summarizes the methodology utilized in literature reviews and the research gap.

2.1 Slum resettlement

Social capital

Rich literature works are related to slum resettlement for various research purposes according to different socioeconomic statuses and cultural norms worldwide. However, some characteristics show a higher homogeneity in diverse societies and nations, in which this literature review emphasizes the factors commonly appearing to correspond to slum mobility and resettlement. Social capital significantly impacts informal dwellers' relocation decisions, especially in developing countries. Slum dwellers profoundly rely on their relationships with relatives and friends, introducing job opportunities and finding dwellings through solid relationships. In many cases, relatives utilize informal channels to help cousins integrate into the system with information on job opportunities in the city. As a result, migrants who have been away from their places of origin for an extended period choose to continue living in slums due to dissatisfaction with their lives and lead to be reluctant to return to their hometowns (Badmos et al., 2020).

For disadvantaged groups, high social capital, strong bonding, and trust connect counterparts with similar socioeconomic status (T.-K. Kim et al., 2005). For example, in Semarang, Indonesia, Manaf et al. (2018) point out that social environments, such as relationships with neighbors, relatives, family, and community activities, lead to the highest satisfaction in the context of factors affecting housing satisfaction and willingness to move out of the informal settlement. Likewise, Badmos et al. (2020) survey in Lagos, Africa, attempting to understand the factors that make slum dwellers choose where to live and what drives their decision to stay in a slum after moving in. This study underlines the importance of neighborhood and

family characteristics in residents' decisions to relocate. The characteristics of migrants tend to settle in communities with similar sociocultural backgrounds. Most of them move to the city through referrals from relatives and usually live with relatives when finding shelter in a slum community. Similarly, Arandel and Wetterberg (2013) discuss that slum resettlement disruptively stresses job opportunities, social networks, and livelihood.

In Bangkok and Ho Chi Minh, Carpenter et al. (2004) survey five specific neighborhoods, showing that Bangkok's informal settlements are closely linked to the city's employment and transportation structure. Nonetheless, due to tenure, an informal settlement in Bangkok has a strong structured interaction over the right to live for an extended period. Regardless, social ties are more confined to community dwellers than ties outside the community. Thus, collective memory led to stable and less frequent outcomes of residents moving around. Moreover, Lall et al. (2006) reveal that moving dwellers to other housing in the city's suburbs disrupts the social networks that dwellers rely on for livelihood resources. As a result, relocating informal dwellers without considering connections between family, relatives, neighbors, and ethnic enclaves, the new resettlement location without providing jobs and benefits often experiences dilemmas during the relocation process.

In a survey by Badmos et al. (2020), slum dwellers cite family ties, affordable housing, and proximity to work as significant factors in moving to a slum. Essential factors in choosing to stay in the community broadly included gender, housing status, family size, marital status, affordable housing, workplace, number of bedrooms occupied by households, and attachment to the neighborhood. However, Bayrau and Bekele (2007) claim that relocating slums typically benefits urban development. The potential development of the private sector and land values can increase employment opportunities and raise incomes. This study analyzes environmental, demographic, cultural, and socioeconomic factors to understand residents' willingness to relocate and what compensation is needed. The main reason for the remaining reluctance to move out is that they are satisfied with the existing living environment and have a strong sense of security. In addition, the solid cultural value factor makes the residents prefer to maintain their neighborhood relations.

Some literature works to study the sequence after relocation; for example, Aziz et al. (2014) describe the massive demolition of informal settlements and relocation to high-rise buildings in Kuala Lumpur during the 80s-90s. This study conducts semi-structured interviews and finds that respondents state that the previous social tie no longer existed after the resettlement. In addition, the need for a better acquaintance with new neighbors and interaction opportunities in the public space hinder community integration. Ultimately, the collapse of the initial community structure, ethnic conflict, and lack of living environment led to a lack of sense of belonging among residents. Likewise, Samuel and Nisar (2021) point out that contrasts in ethnicity and cultural practices are more likely to lead to conflicts after moving out of government housing because of religious disparities. The study indicates that reasons for staying in slums depend on socioeconomic conditions. As slum dwellers' living conditions vary, not all living in slums are low-income households. Alternatively, depending on religious beliefs, family size is profoundly affected, with factors of solid social capital making them more inclined to stay in existing slums.

Life cycle

In the study of residential relocation reasons and duration of living, Eluru et al. (2009) indicate that demographic, socioeconomic, and commute-related variables significantly influence moving or staying in a location when considering reasons for moving and duration of stay. In particular, the effect of family size on residence living period shows heterogeneity which further explains that the primary reason for moving is to cope with changes in family composition. Moreover, aggregate resilience measures suggest that a range of individual, household, and commute-related variables have potentially far-reaching effects on reasons for moving and duration of living. Regarding dwellers' mobility, Satu and Juthi (2019) survey three slums in Bangladesh and indicate that family size is a critical factor affecting the mobility of informal dwellers. This study categorizes the main factors of mobility of slum dwellers into the life cycle, employment, income and hardship, land tenure and home ownership, neighborhood conditions, and groupings. However, the five most important factors affecting residential mobility are slum relocation, unavailability of utility services, marriage, changing jobs, and acquiring homeownership status. In this survey on residential mobility, three-quarters of respondents state they have changed residences frequently.

The determinants of location choices in the home and workplace vary according to individual life stages. T.-K. Kim et al. (2005) explore environmental and neighborhood factors at different life stages in people's choices of jobs and places to live. The survey finds that, regarding individual characteristics, the importance of age at home parenting stage is positively correlated with job availability. Conversely, young families without children or low-income individuals value job availability. In other words, relocation decisions are made by the stage in the household life cycle. Based on their job location, they choose the place to live due to attempting to control commuting costs within their budget. Table 1 summarizes the articles related to social capital and the life cycle listed in this section.

Table 1 Selected articles related to social capital and the life cycle

Selected articles related social capital and life cycle		
Reference	Methodology	Location
Manaf et al. (2018)	Residential satisfaction index	Semarang (Idonesia)
Badmos et al. (2020)	Descriptive statistics/ Chi-square test	Lagos (Nigeria)
Carpenter et al. (2006)	Comparative analysis	Ho chi minh (Vitenam) Bangkok (Thailand)
Lall et al. (2005)	Probit model	Bhopal (India)
Aziz et al. (2014)	Case study	Selangor (Malaysia)
Samuel & Nisar (2021)	Thematic analysis	Islamabad (Pakistan)
Bayran & Bekele (2007)	Multinomial logit model	Addis Ababa (Africa)
Eluru et al. (2009)	Discrete choice model/ joint choice modeling	Zurich (Switzerland)
Satu & Juthi (2019)	Descriptive statistics	Dhaka (Bangladesh)
Kim et al. (2005)	Binomial logistic regression/ GIS /Chi-square test	Detroit (USA)

2.2 Theoretical relocation decision

The behavior of the decision to migrate in demography, social science, and related discipline has been widely studied. Wolpert (1965) proposes the theory of the behavior of the migration decision, known as the stress-threshold model, and criticizes various models of studying migration behavior. The core concepts of migration behavior are "*place utility, a field-theoretic approach to search behavior, and the life cycle approach to threshold formation*." Determining relocation is often a behavior in which individuals or groups adapt to perceived environmental changes. For example, place utility explains that individuals delay the decision to relocate by mediating adaptability to the external factors of the location and directly responding to the economic environment. Moreover, a field-theoretic approach to search behavior

suggests determining the personal behavioral space by individual needs, motivations, and abilities. As a result, residents in the central area can accumulate interaction, connection, and more possibility of action space.

Furthermore, the action space determines the nature and degree of individuality due to the different behaviors in each life cycle. For example, gender, race, education, household income, and social status exhibit differences in mobility choices that influence individuals early on stage. As a result, homogeneous subgroups of individuals are formed by the interdependence and influence of income, education, and occupation.

An extension of the stress-threshold model, Speare (1974) suggests residential satisfaction to witness how mobility influenced individual and residence variables. The cost-benefit model guides the research in Taiwan that most migrants move due to economic considerations. At the same time, job information by word of mouth and proximity to friends and relatives play a critical role in deciding where to move. The model divides into three dimensions, individual or household characteristics, location characteristics, and social bonds that affect residential satisfaction. In the study, variables such as age, income, and duration of living may not direct the consideration of moving; however, it is likely to affect satisfaction as individuals accumulate wealth to live in a better environment. Simultaneously, living in the same neighborhood implies gaining more friends and solid social bonds, and the proximity of local facilities increases satisfaction.

Job accessibility

In the traditional urban economic model, the labor market relies on assumptions about information availability and employment mobility. Rouwendal (1998) argues that the employees are homogeneous and analyzes the relationship between the two employment centers. When an employee commutes to work at another employment center, the counted commute costs could be 8% of income. Under this model, it says the closer the employee lives to an employment center, the higher the possibility of high unemployment. It also states that the sub-center's role in urbanized areas affects the spatial mismatch of urban labor markets. Following the spatial mismatch hypothesis, Bunel and Tovar (2014)

explain the circumstances posed by labor and land markets due to residential segregation, employment fragmentation, and spatial friction in job search and commuting. Thus, it carries the phenomenon of unemployment, low income, and low house rent.

In urban areas, obtaining employment opportunities is a complex process. Boschmann (2011) employs traditional and critical perspectives to explore the role of individual-level location decisions concerning job opportunities. An overall perspective is that workplace and housing are mutually determined, but there are more employment challenges due to spatial separation from potential job locations. Low-income workers face more significant location constraints, such as the geographic reach of job searches, skills-related job opportunities, commuting mobility, and affordable housing options. Moreover, regarding urban residents' job accessibility, Reingold (1999) indicates that residents cannot find employment opportunities nearby due to job vacancies often introduced by word of mouth. As a result, downtown residents are less likely to find jobs in the suburbs because of inaccessibility, limited information, and discrimination by suburban employers. It leads residents in deprived inner-city areas to rely more on seeking jobs within their perimeter.

Likewise, Ommeren et al. (2000) examine the dependency on labor and explain the behavior of employees in job mobility and residential relocation. The search theory proposes factors that lead to an imperfect housing market, making employees likely to reduce employment opportunities in resettlement so that employees are inclined to reduce the necessity of moving. Moreover, commuting distance is vital when choosing a job and residential mobility. To some extent, traffic congestion increases commuting costs in an urban megacity. Thus, when the cost of residence movement increases, it offsets the employee's acceptance of the job opportunity. In other words, changing the place of residence is an inevitable increase in relocation costs and the high possibility of unemployment, whether the increase or decrease in commuting distance decisively affects the willingness of employees to relocate. Given this, employment opportunities are generally far more complex than finding housing.

Transportation

Cities are more productive than surrounding hinterlands because urban economies include affluent labor markets, input-output linkages, and knowledge spillovers. Transportation is an integral and vital factor in residential decision-making and reduces the spatial mismatch between housing, work, and other activities (J. H. Kim et al., 2005). Furthermore, So et al. (2001) analyze the relationship between wages, commuting costs, housing prices, housing choices, and job location. Transportation improvements reduce commute times, which increases the number of non-metropolitan population commuters to the metropolitan labor market. Likewise, Boschmann (2011) states that the convenience of bus routes is the most crucial factor in the choice of housing for the working poor.

On the other hand, Prashker et al. (2008) sought to understand commuting distance and gender as factors in choosing where to live in Tel Aviv, Israel. The main factors influencing residential location decisions are residential units, location, accessibility, and individual characteristics. Household and neighborhood characteristics are considered explanatory variables in the housing choice model. Moreover, household variables include age, children, income, and education, while neighborhood characteristics include density, crime rate, safety, and school quality. Table 2 summarizes the articles on job accessibility and transportation listed in this section.

Table 2 Selected articles related job accessibility and transportation

Selected articles related theoretical relocation decision		
Reference	Methodology	Location
Wolpert (1965)	The stress-threshold model	-
Speare (1974)	Stepwise multiple regression	Rhode Island (USA)
Rouwendal (1998)	Search theory	Wageningen (Netherlands)
Bunel & Tovar (2013)	Local job accessibility model/ descritive statistics	Paris (France)
Boschmann (2011)	Interview/ Nvivo	Ohio (USA)
Reingold (1999)	Multinomial logit model	Chicago (USA)
Ommenern et al. (1999)	Comparative statics	-
Kim et al. (2005)	Multinomial logit model	Oxfordshire (UK)
So et al. (2021)	AMM model	USA
Prashker et al. (2008)	Descriptive satistics/ logit choice model	Tel Aviv (Israel)

2.3 Literature reviews findings

From the various dimensions of factors affecting relocation decisions, such as social ties, life cycle, job accessibility, and transportation, findings illustrate the figures from the literature review to comprehend the phenomenon while considering relocation. For example, according to research by Lall et al. (2006) conducted in Bhopal, India, the average slum dweller lives for about 21 years. From the classification of six different housing types, statistics show that about 35% of slum dwellers relocate to government-provided affordable housing, and about 80% of residents remain in slums. Moreover, in the survey, escaping from living in slums and saving regularly determines a household's ability, and 74% rely on funding sources to finance housing. In contrast, only 6.4% of households successfully apply for a formal housing loan to buy a home.

Digging deeper, surveys related to title deeds show that 80% of residents have proof of land occupation for a limited period. In other words, even though property owners in slum areas are secured by tenure, they cannot trade in the formal market, thus creating barriers to mobility. From another perspective, Bayrau and Bekele (2007) investigate residents' willingness to relocate and their preference for compensation. Interestingly, 53% of renters prefer to continue renting elsewhere in the compensation options. In comparison, 71% of landlords accept a home of equal value, and 25% prefer to gain a plot of land and cash.

Regarding social ties and household components, the survey by Badmos et al. (2020) reveals that 65.8% of the respondents mainly consider family ties when migrating, while 44.9% consider job opportunities in nearby areas. The study also shows that households are 0.42 times more likely to stay in their residence than singles. Notably, people who work in informal settlements prefer to stay where they are, while income is not a significant factor in staying or resetting. In addition, in 20 years survey spanned, Eluru et al. (2009) find that individuals in the household are nearly 95% less likely to move due to employment factors. Given this, the relocation decision factor of a family is more complex than that of a single resident due to the consideration of schools, work, and shopping.

Similarly, Samuel and Nisar (2021) opine that jobs, schools, and markets are the primary factors that make residents choose to stay in informal settlements. Furthermore, a study by Manaf et al. (2018) shows that 72% of respondents are not interested in moving to an affordable rental apartment because of their connection with family and friends. On the contrary, Prashker et al. (2008) test the relationship between working distance and age. The study finds that young individuals and those over 65 travel shorter distances than other age groups. From the finding, distance is the most critical explanatory accessibility variable, and women are more sensitive to distance than men, although higher income reduces sensitivity to distance. Notably, household size, family status, and ownership of house/renter are not significant variables in the test.

Regarding occupational attributes, Hess (2005) calculates employment and transportation accessibility measures based on the distance between residence and employment. The results show that more than 70 percent of poor adults live within 10 kilometers of the city center. Furthermore, from a spatial and skill mismatch trend perspective, a study by Shen (2001) regard to employment opportunities shows that jobs suitable for low-educated workers in central urban areas are increasingly dispersed. Opportunities created by job growth, only 6.9% of new jobs are in central cities. In comparison, 20.4% of mobile jobs are in central cities. However, Boschmann (2011) states that disadvantaged workers often change jobs and residences. It also finds that residential choices are based on mobility options than job location. As a result, with diversifying commuting methods, low-income groups often get high-paying jobs in metropolitan cities.

2.4 Summary literature reviews

In research on residential relocation behavior, many works of literature categorize moving determinants into demographic characteristics, individual and household socioeconomic, environmental attributes, housing supply, commuting means, and drivers of moving (Eluru et al., 2009). From the literature on different aspects of the microeconomy, employment market, and relocation intentions, transportation factors and commuting means for low-income households play an essential role in many developed countries. In contrast, household characteristics, neighborhood relationships, employment opportunities, and livelihoods are often the primary considerations for informal dwellers in developing countries.

Many social and economic studies on employment attributes include job accessibility, labor market, and industrial distribution. Spatial autocorrelation methods articulate straightforward and intuitive results in research related to geographic data. Spatial statistics are built upon statistical concepts but incorporate location in geographic coordinates, distance, and area. Moreover, traditional exploratory data analysis deals with relationships between variables and how they affect each other. In contrast, spatial autocorrelation associates a specific variable with location while considering the same variable's values in the neighborhood. For example, Debnath and Naznin (2011) examine spatial dependencies between slums and industrial development, while Hess (2005) employ GIS to map residence and employment locations and calculate employment and transport access measures.

Gravity models are widely used to measure distance-related attributes (Hess, 2005; Yuzuru, 2013). However, the conventional regression model has disadvantages within the constraints of using interview-derived datasets due to its large sampling requirements, which may not be suitable for a limited sampling size. Furthermore, in the study of the testing transition of slum dwellers into the formal housing sector, Lall et al. (2006), Bayrau and Bekele (2007), and Prashker et al. (2008) conduct a probit model and logit choice model to test the possibility of households' mobility and evaluate the determinants of willingness to relocate, in contrast, due to collinearity among the variables of interest, Pryer et al. (2002) suggest that regression analysis may not be eligible to comprehend the attribute of slum dwellers.

According to the literature review analogous to this study, Badmos et al. (2020), Satu and Juthi (2019), and T.-K. Kim et al. (2005) employ descriptive statistics and a chi-square test to examine determinants of slum dwellers and households in residential choices, while Prashker et al. (2008) utilize descriptive statistics to estimate various characteristics and factors influencing individuals' choice of where to live. Regarding application selection, Debnath and Naznin (2011) apply Geoda to construct a spatial autoregressive model and perform the statistical analysis. T.-K. Kim et al. (2005) use GIS modeling to build a database of spatial variables to predict the importance of proximity to work. Moreover, Manaf et al. (2018) analyze slum dwellers' level of satisfaction and willingness to move on a five-point Likert scale. Subsing et al. (2021) utilize the SPSS application to analyze the factors affecting the quality of life of the elderly in

Bangkok slums. Finally, Pryer et al. (2002) suggest that cluster analysis identifies subsistence groups among households to classify the homogeneity of groups. Table 3 summarizes the selected articles on methodology.

Table 3 Selected articles on methodology

Selected articles on methodology

Reference	Menthodology	Location
Badmos et al. (2020)	Descriptive statistics/ chi-square test	Lagos (Nigeria)
Satu & Juthi (2019)	Descriptive statistics	Dhaka (Bangladesh)
Prashker et al. (2008)	Descriptive satistics/ logit choice model	Tel Aviv (Israel)
Debnath & Naznin (2011)	Spatial autoregressive model/ Geoda	Dhaka (Bangladesh)
Subsing et al. (2021)	Structural equation model/ SPSS	Bangkok (Thailand)
Kim et al. (2005)	Binomial logistic regression/ GIS	Detroit (USA)
Manaf et al. (2018)	Case study/ Likert scale	Semarang (Idonesia)
Pryer et al. (2002)	Cluster analysis	Dhaka (Bangladesh)

The factors of job location are likely to influence residents' decision-making in the Klong toey community. As times changes and economic circumstances improve, early literature focuses on subjects such as malnutrition and the health of slum dwellers (Haddad et al., 1999; Subsing et al., 2021), environmental upgrading, land tenure (DiNino et al., 2006), and adaptation of relocation problems encountered later (Aziz et al., 2014; Samuel & Nisar, 2021). Hence, there is no relevant research on whether the factors related to the residents' workplace affect residents' willingness to relocate. Nevertheless, relevant literature suggests that offering compensation schemes (Viratkapan & Perera, 2006) is the most effective approach to obtaining residents' consent to relocation. However, these early findings and methods are likely only applicable to some residents of the Khlong Toei community nowadays.

Given this, the scarcity of exploration related to job location on studying dwellers in informal settlements between the previous study and theoretical mobility decision-making can be addressed. The literature review mapping (Figure 4) represents the linkage from the theory of decision-making to migration by Wolpert (1965) to the model of mobility decision-making proposed by Speare (1974). Many empirical literature reviews pertaining to slum resettlement mainly emphasize the aspect of social capital and life cycle. On the other hand, regarding location characteristics, it has wildly studied the aspects of job accessibility and transportation for disadvantaged groups in the developed country; in turn, job locations in

developing countries have seldom been addressed when relocating slum dwellers. Hence, it leaves much room for further research after the prevailing conditions of the informal settlement state have altered.

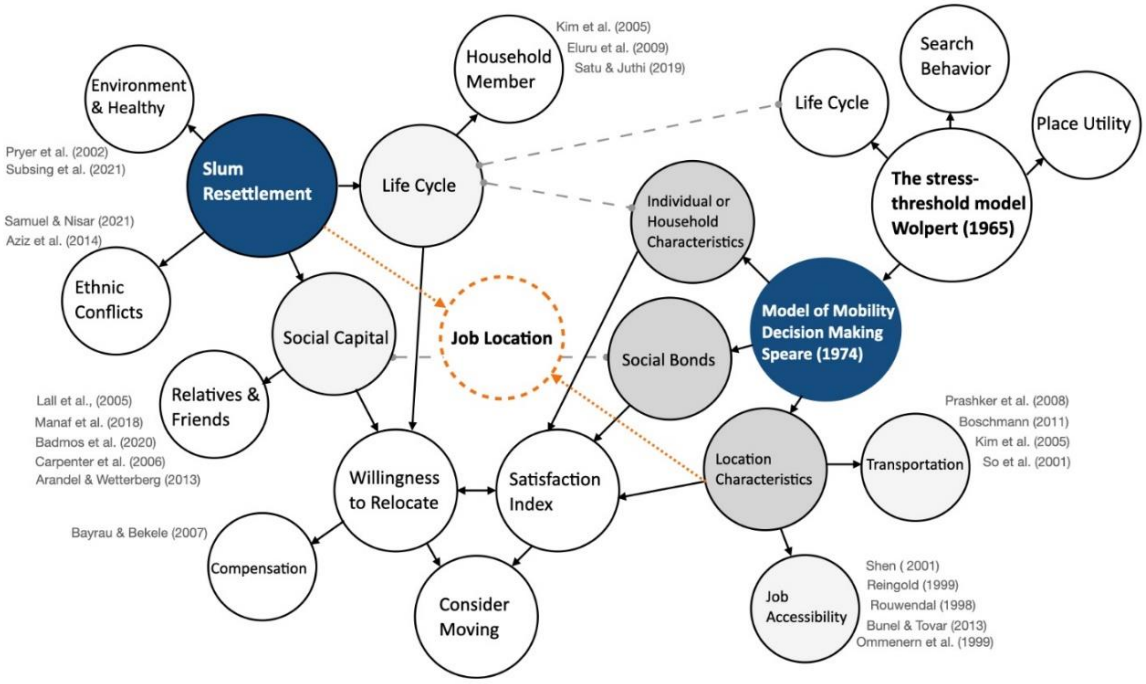

Figure 4 Literature mapping

Chapter 3 Methodology

This chapter consists of research methods and methodological procedure, followed by data collection and data collection guide, including the study location, sampling design to describe the selection of a target population, unit of analysis, data collection guide, and the measurement, including operational definition and code to avoid ambiguity during the statistical analysis process. Furthermore, the introduction of quantitative analytical methods in spatial autocorrection, chi-square test, cluster analysis, and qualitative analytical methods in conceptual context analysis is presented. Lastly, the variables section presents dependent and independent variables extracted from literature reviews.

3.1 Research methods

This study employs a mixed methodology with a convergent parallel design to overlap the convergence between the quantitative results and qualitative findings. The quantitative approach is theory-driven, leading to an extension of existing theory. At the same time, qualitative data interpretation develops a data-driven hypothesis and theoretical perspectives to investigate a hectic understanding of the phenomenon (Gelo et al., 2008). In other words, the quantitative approach quantifies data and generalizes results from a target population; in turn, the qualitative approach creates a detailed observation description. Thus, quantitative analytic methods in this study contain spatial autocorrelation, chi-square test, and cluster analysis. Consequently, the qualitative approach seeks to conduct independently with quantitative research, and the results of both analyses are combined in the interpretation results (Busetto et al., 2020).

Based on the framework extracted and adopted by Speare (1974), this study divides the determinants of relocation decisions into three categories, individual characteristics, household characteristics, and the core of the study, occupational attributes. Thus, this study first computes Global Moran's I to evaluate whether the spatial autocorrelation technique's relationship of residents' job location is clustered or spatial independent. Meanwhile, spatial analysis utilizes the application Geoda and QGIS 3.20 version to create a job location map. In expansion, the Crimestat application has been utilized to illustrate the distribution of job locations through a standard deviation ellipse, which also represents the mean and

median center of job locations in the Klong Toei district. Secondly, to answer the research question of which job location determines residents' willingness to resettle, the chi-square test is employed to test whether job location has a statistically significant relationship with the willingness to relocate. In addition, since the data collected has been coded into categorical variables, the chi-square test adequately answers the research question.

The primary data collection conducts survey research via face-to-face interviews in three selected Klong Toei communities. Finally, cluster analysis identifies clusters of points in space. It has been employed as a classification tool to interpret the residents' groups, which provides a perspective on the categorized groups with different degrees of willingness to relocate. Moreover, this study utilizes the tool SPSS application to examine cluster analysis. The following sections explain the procedures of research methods, and additionally, details of data collection and analytical methods are introduced.

3.2 Procedures of research methods

Figure 5 demonstrates the research procedure for conducting the survey research and data analysis procedure. Due to the sacristy of reliable data and resources, this research applies the survey approach to collecting primary data via face-to-face interviews. A probability technique to divide the population into clusters by randomly selecting the samples, cluster sampling design has been conducted because it selects specific groups from within an entire population or demographic. It achieves time sufficiently, feasibility and reduces variability and potential bias. The tendency of individual characteristics can be discovered within a cluster, especially in the case of the density Klong Toei community. Based on relevant variables extracted from theories and literature, the contents of the questionnaire are organized according to variables identified from the literature reviews.

Moreover, the dependent variable applies a four-Likert scale to measure the degree of residents' willingness to relocate, while independent variables are categorized in this study. Before the face-to-face interview, the operational definition builds a clear judgment standard while collecting data and clarifies each choice of questionnaires to avoid ambiguity when collecting data. Furthermore, data collection stands for

quantitative and qualitative methods, and coding for the quantitative data analysis includes spatial autocorrelation, chi-square test, cluster analysis, and context analysis for the qualitative approach. Eventually, the analysis results are merged and contribute to this study's discussion and conclusion.

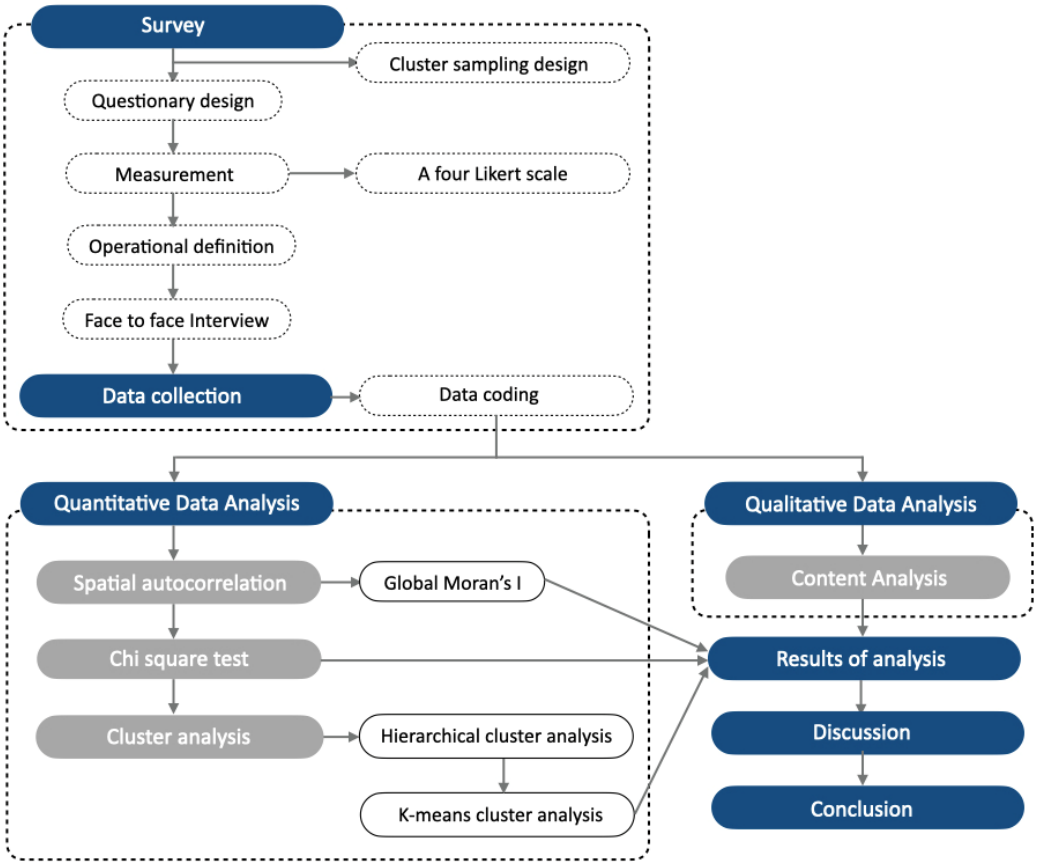

Figure 5 Research procedure

3.3 Data collection and data collection guide

This study employs the survey research method to obtain the primary data, which describes the broad characteristics of the high-density community. Due to there being no adequate accessibility to public data resources, either from the previous literature, works mainly concentrate on groups such as seniors or adolescents. More importantly, there is no information related to residents' job location. Therefore, the primary data gain up-to-date information, which is practical for comprehending the population nowadays.

Through questionnaire and interview procedures, the advantage of collecting primary data, which gives the researchers complete control during the data collection process that it can be coded and analyzed.

Moreover, a face-to-face interview is conducted to acquire the individual, household, and occupational-related data for the quantitative approach by explanatory method to investigate relationships between factors and willingness to relocate to test the relationship between factors and job location pertaining to the willingness to relocate. At the same time, a semi-structured questionnaire is designed at the end of the interview to discuss paramount factors while considering moving to a new place. In other words, these findings imply causes and relations residents favor to stay or move for the qualitative content analysis approach.

3.3.1 Study location

As aforementioned in the scope of the study, the three sub-communities selected in the Klong Toei community display the field survey for photo shooting during the Song Kang Thai new year in 2023. It demonstrates the characteristics of three communities of living environments and the different attributes of each community. In general, Lock (Figure 6) and 70 Rai (Figure 7) have similarities in house scale aspect, combining one or two stories in height and various construction materials. Furthermore, some differences are that Lock has the highest density of households and approximately 80 cm narrow aisle between two sides of row houses. Since it is not well planned, a maze-like corridor system leads visitors to easily get lost when walking inside the community.

On the other hand, the aisle in 70 Rai is well organized in a straight-ahead and tac-toe manner, with clear signage at each entrance. Also, the bunch of greenery in front of households declares that residents are likely to live for a more extended period. Also, the housing decoration in the architecture implies the residents' tastes and local culture from diverse provinces of Thailand. Despite two low-rise communities, Lock and 70 Rai, another community, Flat (Figure 8), is an apartment like other social housing and communities around Bangkok. Furthermore, the site photo taken during the Song Kang Thai new year conveys different community attributes. In Lock, the higher-density community interacts more with relatives,

neighbors, and friends. The water spreading points are set up everywhere on the main commercial street, and it welcomes everyone to get wet when passing through the points. In 70 Rai, because the public space is wilder enough, some families block the aisle to have their rubber swimming pool as a private party. In contrast, fewer Flat residents gather in a greenery public setting spot and sing karaoke, which implies many Flat residents are away from residence during the Thai new year.

Figure 6 Lock community during Songkran festival 2023

Figure 7 70 Rai community during Songkran festival 2023

Figure 8 Flat community during Songkran festival 2023

3.3.2 Sampling design

Cluster sampling is a statistical method used to divide the population into clusters or groups (Taherdoost, 2016), and each cluster provides a miniature representation of the entire population. Considering the implementation, this study adopts the cluster sampling technique suitable for large geographical areas as three sub-communities Lock, 70 rai, and Flat, especially in the high-density Klong Toei community. In addition, randomization is operated to classify the population, refrain from the bias generated during the survey, and maximize the characteristics of the population through the sample. Unlike other probability sampling methods, cluster sampling does not require a particular sampling size. Meanwhile, according to the central limit theorem, a minimum of 30 sampling requirements is sufficient and satisfies the population's standard deviation (Henderson & Sundaresan, 1982; Islam, 2018). Therefore, this study examines primary data by interviewing 30 samplings of each community, a total of 90 residents.

3.3.3 Unit of analysis

The unit of analysis is individuals who live in Lock, 70 Rai, and Flat in Klong Toei communities and are currently employed, as a critical question is the respondents' job location, as it is the core of the study.

3.3.4 Data collection guide

The questionnaire has been organized into three sections; the first is general information related to individuals, household characteristics, and occupational attributes. The second section is the community-related attachment questionary, followed by the third section as the core of this study, willingness to relocate, and a semi-structured question for further discussion of factors influencing the residents' willingness to relocate. Table 4 represents each section's description, objective, and data collection methods.

Table 4 Data collection guide

Section	Description	Objective	Data collection methods
1	Social-demographic background	To collect the general information of respondents in individual and household dimensions	Questionnaire
2	Community attachment	To examine the role of social capital and the degree of community attachment	Questionnaire
3	The willingness to relocate and considered factors corresponding to willingness to relocate	To identify the degree of willingness to relocate and comprehend the perception of respondents and factors while considering relocation	Questionnaire and face to face inverview

3.3.5 Operational definition and code

An operational definition, and a measurement definition, provide the raw data for statistical analysis, making the collection date more accurate with precise measurements. The measurement process begins with selecting an object of analysis, then investigates guidelines, assigning numbers and codes to indicate specific characteristics of the object of analysis (Gómez & Mouselli, 2018, p. 80). Scaling is assigning numbers to objects and events according to rules; for example, different measurement scales, such as nominal, ordinal, interval, and ratio, determine the appropriate type of statistical data analysis. In addition, the dependent variable, willingness to relocate, considers the social norm that residents may respond to the perception of willingness as neutral. Thus, it is measured on a four-Likert scale, with one being very improbable and four being very probable to relocate. Concerning the validity of the measurement, content validity has been involved in assessing current performance rather than predicting the future.

Regarding independent variables, age has emphasized how old you are "now," gender is coded as a binary variable: male as one and female as two. The previous study finds that many Klong Toei residents have married without registration. Therefore, marital status is measured as distinction options that describe a person's relationship with a significant other, and it depends on the perception of the respondent on the relationship, but not in legal terms. A household member has measured the number of individuals living in the same household, including the respondent. Regarding the dependent ratio, children in the

household indicate an age under 15 years old, while the elderly are above 60 years old. Monthly household income is measured by the combination of total household members' monthly income.

Regarding the type of job, respondents are asked about their occupation during the survey and define the type of job after reviewing occupations. The type of jobs is categorized into five sectors, retail and services, logistics and transportation, private office, professional, and business owner. Moreover, the measurement also considers the respondent's workplace to avoid ambiguous definitions. For example, document delivery in an office will count in the private office sector as their working environment and status differ from those in the logistics and transportation sectors. Likewise, according to the monthly household income, respondents who sell goods online and earn over 100,000 Baht consider in the business owner sector. Table 5 summarizes the definition of job type and the respondents' occupations into five sectors.

Table 5 Definition type of job

Job sector	Occupation	Counts	Total	(%)
Retail and Service	Sales	8	47	52%
	Sales on KT market	1		
	Sales online	3		
	Sales Part time	2		
	Maid	10		
	Work for hire (Sewing (2), PAT (4), home moving, office, sales)	16		
	Factory worker	2		
	Bakery maker	1		
	Street cleaner	1		
	Cooker	1		
	Volunteer/NGOs	2		
Logistic and transportation	Express delivery driver	6	12	13%
	Motorcycle taxi	1		
	Taxi driver	1		
	Grab driver	2		
	Line men	1		
	Delivery at 7-11	1		
Private office	Office worker	13	17	19%
	Office worker (related PAT)	1		
	Document delivery	3		
Professional	Technician car painting	1	11	12%
	Technician lift	1		
	Technician repair at PAT	1		
	Technician stairs	1		
	Technician IT support at PAT	1		
	Technician car repairing	1		
	Manager	1		
	Teacher	2		
	Musician	1		
	Police	1		
Business	Maid management owner	1	3	3%
	Tattoo studio owner	1		
	On-line Sales	1		

Job location in the distance is measured by asking respondents to point out their job location on Google Maps via iPad or a particular street name when respondents are unfamiliar with technology products. Furthermore, the centroid of a triangle has been selected between three survey communities. Hence, the distance of the job location is measured from the centroid using the distance matrix from QGIS software. The type of tenure is measured by having a contract or without a contract with the landowner or sub-renter who needs to pay the rental. Despite the three options, other options are provided for respondents to describe their type of tenure. Duration of living is measured as the period since the respondent has lived in the Klong Toei community. The number of relatives and close friends in the Khlong Toei community is measured by asking respondents a proximate number for coding yes or no as binary variables. Regarding coding, 15 variables are categorical, including two types of scales, ordinal and nominal variables. Table 6 exhibits details of coding for each variable.

Table 6 Scale of variables and code

	Variables	Scale	Code
	Dependent Variables		
	Willingness of relocation	Ordinal	1 = very improbable, 2 = improbable, 3 = probable, 4 = very probable
	Independent Variables		
1	Gender	Nominal	1 = male, 2 = female
2	Age	Ordinal	1 = 17-25 years old, 2 = 26-35 years old, 3 = 36-45 years old, 4 = 46-55 years old, 5 = 56-65 years old
3	Marital status	Nominal	1 = single, 2 = married, 3 = divorced, 4 = in separation, 5 = widows
4	Household member	Ordinal	1 = 1 person, 2 = 2-4 persons, 3 = 5-7 persons, 4 = 8-10 persons.
5	Children in household	Ordinal	1 = no child, 2 = 1-2 children, 3 = more than 2 children
6	Elderly in household	Ordinal	1 = no elderly, 2 = 1 elderly, 3 = 2 and more than 2 elderlies
7	Education Attainment	Ordinal	1 = Completed elementary school education and under, 2 = Graduated from junior high school, 3 = Graduated from secondary school or with a vocational degree, 4 = Completed higher education at university or with a higher vocational degree
8	Type of job	Nominal	1 = retail and servers, 2 = logistics and transportation, 3 = private office, 4 = professional, 5 = business owner
9	Monthly income	Ordinal	1 = 5000-20,000 Baht, 2 = 20000-50000 Baht, 3 = 50,000-100,000 Baht, 4 = greater than 100,000 Baht
10	Job location in distance	Ordinal	1 = 0.1-3km, 2 = 3-6km, 3 = greater than 6km
11	Type of tenure	Nominal	1 = residents with contract with landowner, 2 = sub-renter, 3 = residents without contract with landowner, 4 = others
12	Duration of living	Ordinal	1 = 0.1-1 year, 2 = 11-20 years, 3 = 21-30 years, 4 = 31-40 years, 5 = greater than 41 years
13	Relatives in the community	Nominal	1 = yes, 2 = no
14	Close friends in the community	Nominal	1 = yes, 2 = no

3.4 Quantitative analytical methods

Quantitative data analysis consists of three methods. Spatial autocorrection utilizes the job location variable's spatial data to test Moran's I to see how the data is clustered or dispersed and present a job location map. Furthermore, the chi-square test examines the relationship between categorical data to answer the core research question. Finally, cluster analysis employs Hierarchical and K-mean cluster techniques to interpret the characteristics of residents.

3.4.1 Spatial autocorrelation

Spatial autocorrelation has been crucial among spatial modelers since the early 1970s. According to Tobler's first law, measurements at locations close to each other will be more similar than measurements at distant locations. In other words, if features closer to each other are more similar than those farther apart, they are spatially correlated and form a cluster (Birch et al., 2009; Peeters et al., 2015). The spatial weight matrix defines a neighborhood structure, is an integral part of spatial modeling, and is a formal expression of spatial dependencies between observations (Bivand et al., 2009; Getis & Aldstadt, 2004). Utilize the core of spatial statistics to define concepts in spatial analysis which aims to statistically measure and analyze the dependence between observations in geographic space (Maruyama, 2015; Wulder & Boots, 1998). Thus, spatial clustering allows the modeling of the two dominant concepts in spatial phenomena: autocorrelation and heterogeneity (Peeters et al., 2015). This concept provides tests for model misspecification in several forms. For example, determine the strength of the spatial effect of any variable in the model and allow testing of assumptions of spatial stationarity and spatial heterogeneity (McMillen, 2004). The benefit of spatial approaches emphasizes the relevance of spatiality to understanding socioeconomic facts and is commonly applied in social and economic research.

Moran's I statistic is the most widely used measure and test of spatial autocorrelation in Exploratory Spatial Data Analysis (Getis, 2008). It tests the overall spatial interdependence between a region and its neighbors. However, spatial autocorrelation measures such as Moran’s I require a weight matrix that defines the local neighborhood around each geographic cell (Debnath & Naznin, 2011). Besides,

it is often used to detect spatial dependencies but cannot determine spatial dependencies present in regression residuals, such as spatial lag or spatial error dependencies. In other words, it cannot provide information on which model is suitable for explaining spatial dependencies (Bivand et al., 2009; Jin & Paulsen, 2018; Kondo, 2016). The formula of Moran's I is as follows:

$$I = \frac{N\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij}(x_i - \bar{x})(x_j - \bar{x})}{(\sum_{i=1}^{n}\sum_{j=1}^{n} w_{ij})\sum_{i=1}^{n}(x_i - \bar{x})^2}$$

Where:

N	is the number of observations (points or polygons)
$\bar{x}$	is the mean of the variable
x_i	is the variable value at a particular location
x_j	is the variable value at another location
w_{ij}	is a weight indexing location of *i* relative to *j*

3.4.2 Chi-square test

Hypothesis testing is a technique for interpreting and illustrating inferences about a population based on sample data. The Chi-Square test is a statistical procedure for determining the difference between observed and expected values. It is also used to determine whether it correlates to the categorical variables and whether there is a difference or a relationship between two or more categorical independent variables. The x-axis represents $\chi 2$ values, while the y-axis represents the probability density function. Moreover, the distribution is more symmetrical as the degrees of freedom increase. Therefore, Pearson's Chi-square ($\chi 2$) probability distributions typically test the distribution difference and aid in analyzing categorical variables (Hazra & Gogtay, 2016). Thus, in this study, the y-axis is the dependent variable willingness to relocate, whereas the x-axis is 14 independent variables corresponding to residents' individual, household characteristics, and occupational attributes.

Furthermore, the null hypothesis (H0) assumes that the event will not occur, while the alternate hypothesis (H1) is the logical opposite of the null hypothesis. In other words, a null hypothesis does not affect the study's outcome unless rejected. On the other hand, the acceptance of the alternative hypothesis

follows the rejection of the null hypothesis. Therefore, the formula of the Pearson chi-square test is as follows:

$$\chi^2 = \sum \frac{(O_i - E_i)^2}{E_i}$$

χ^2 = chi squared
O_i = observed value
E_i = expected value

3.4.3 Cluster analysis

Cluster analysis is a technique to sort observations into similar sets or groups. Hierarchical algorithms build a tree-like structure by adding or deleting individual elements from a cluster (Ketchen & Shook, 1996). Furthermore, Ward's minimum variance and iterative partitioning methods outperform other methods and share the total sum of squares error criterion with K-means partitioning, which is used to cluster observations directly in Euclidean space (Murtagh & Legendre, 2014). Figure 9 illustrates that the Ward linkage specifies the distance between clusters by computing and minimizing the sum of squares error.

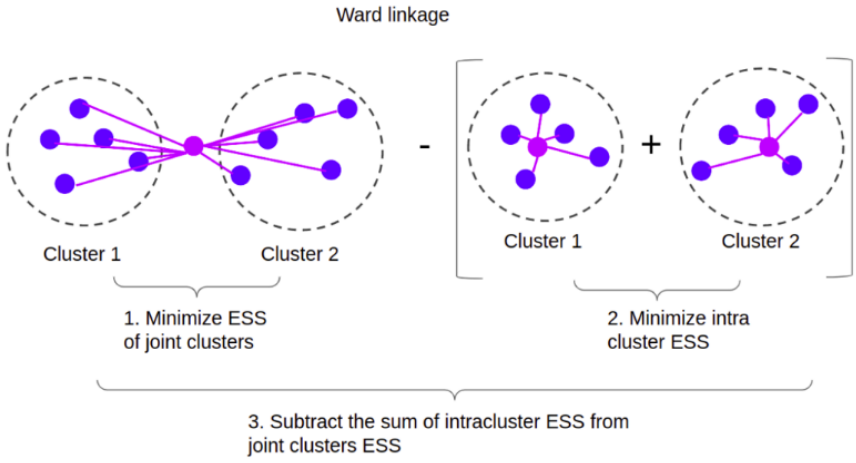

Figure 9 Ward's minimum variance method. Source: Sampaio (2023).

The measure of cluster density is the variance, or the within-cluster sum of squares divided by the number of points. In other words, it is a function of deviations from the mean and minimizes the average

distance within the cluster. Moreover, the analysis of variance provides a criterion that is meaningful in operation, simple in the calculation, and valuable for testing significance (Edwards & Cavalli-Sforza, 1965). The K-means procedure performs less decrement than hierarchical methods (Punj & Stewart, 1983), and non-hierarchical algorithms such as K-means divide samples into K clusters so that the within-cluster sum of squares is minimized (Hartigan & Wong, 1979). The formula of the K-means cluster is as follows:

$$\underset{S}{arg\,min} \sum_{i=1}^{k} \sum_{x \epsilon s_i} \|x - \mu_i\|^2 \quad \text{where:}$$

S sets of observations
k number of sets of predictors
x observation data point
μ_i mean of points in S_i

3.5 Qualitative analytical methods

The content analysis approach systematically compresses the frequency of appearing text into fewer explicit content categories by coding. It transforms a large amount of text into a concise summary of key results (Stemler, 2000) and aims to describe the focus of individuals and groups and corroborate with research methods. Content analysis is commonly divided into two approaches: conceptual analysis and relational analysis. Conceptual content analysis extracts the presence and frequency of concepts in the text, while relational content analysis analyzes the relationship between concepts (Palmquist, n.d.). In other words, a conceptual approach focuses on the appearance of words, frequency of phrases, and explicit data, while a relational approach focuses on meaning, relationships, and implicit data. Moreover, frequencies are assigned to categories by counting the number of respondents in each category. At the same time, encoding units and encoding are the process of identifying the meaning of a message in text and assigning labels to units of meaning.

Conceptual content analysis is widely used to examine the frequency of selected texts in the data. Moreover, to apply content analysis, firstly, determine research questions and selection of a unit of analysis,

which can be a word or a theme, at the beginning of the preparation phase (Elo & Kyngäs, 2008), then code the text into manageable content categories. Lastly, focus on encoding specific words or patterns by reducing text to categories. Hence, to answer the research question of what kind of resident characteristics lead to relocation decisions, this study employs the conceptual content analysis approach to clarify keywords, age groups, job location, and type of job for obtaining conclusions by manual coding. The following steps introduce the process when conducting conceptual context analysis. Figure 10 illustrates the procedure of content analysis.

Conceptual content analysis typically divides into the following steps (Palmquist, n.d.):

1. Unit of Analysis: Word, phrase, sentence, theme.

2. Number of Coding Concepts: Develop a set of predefined or interactive categories or concepts.

3. Concept presence or frequency encoding: The number of frequencies that emerge in the text is counted when encoding the frequency of a concept.

4. Distinguishing concepts: Establish logical encoding rules when texts appear in different forms, classify these text segments, and allow texts to state explicitly or implicitly concepts.

5. Develop text encoding rules: Keep the coding process consistent.

6. Process irrelevant information: Ignore irrelevant texts.

7. Text encoding: Accomplished by hand or utilizing the software.

8. Analyzing findings: Reexamine, ignore, or reassess unnecessary or irrelevant texts to conclude.

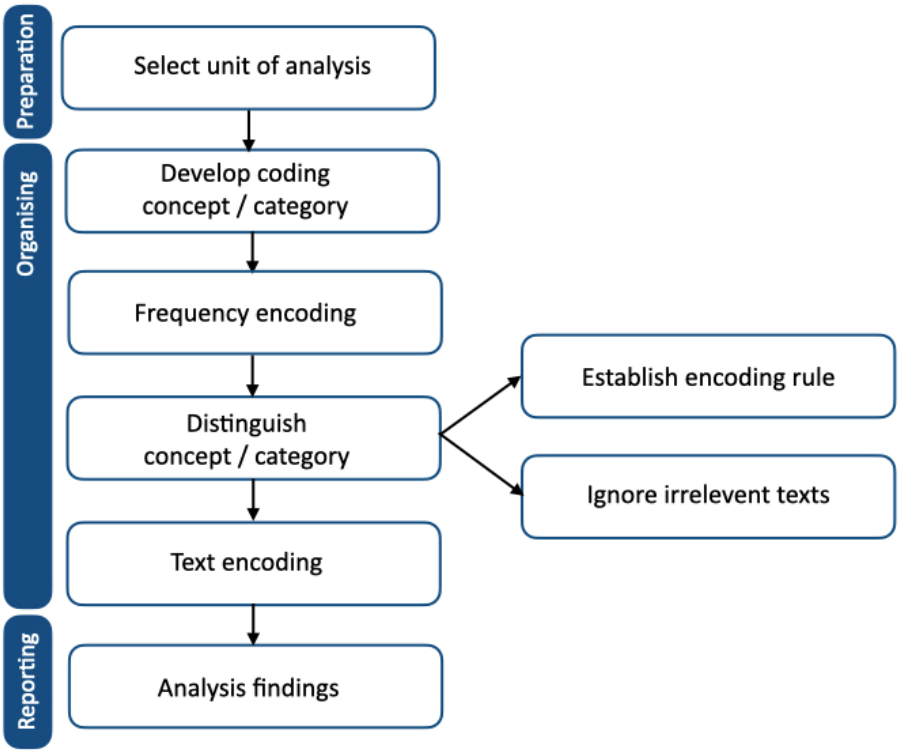

Figure 10 Procedure of content analysis

3.6 Variables

3.6.1 Dependent variables

According to various perspectives on measuring willingness to relocate by residential satisfaction (Bayrau & Bekele, 2007; Manaf et al., 2018; Samuel & Nisar, 2021; Speare, 1974), this study seeks to identify the relationship between job location and the willingness to relocate of the Klong Toei residents. A dependent variable (Y) is the willingness to relocate by measuring a four-Likert scale from very improbable, improbable, probable to very probable to evaluate the degree of residents' willingness or the probability of an individual's perception to move or stay. Considering the social norms, respondents are likely to be neutral; however, the options are given without a neutral willingness to relocate choice to obtain a precise analysis result.

3.6.2 Independent variables

Furthermore, Independent variables (X) in this study are divided into Individual characteristics, including basic individual information such as gender (X1), age (X2), marital status (X3), and educational attainment (X4). In addition, household characteristics include household members (X5), the dependency ratio, children in the household (X6) and elderly in the household (X7), monthly household income (X8), type of tenure (X9), the number of relatives living in the Klong Toei community (X10), close friends living in the Klong Toei community (X11), and duration of living in the Klong Toei community (X12). Finally, the study highlights occupational attributes, including the type of job (X13) and job location (X14).

Individual characteristics

Age indication between the generation of individuals' perceptions may differ in relocation decisions (Bayrau & Bekele, 2007; Manaf et al., 2018). For example, Wolpert (1965) emphasizes age as an essential variable in studying the personal factors of migration. Likewise, Speare (1974) debates that age affects residential satisfaction due to gaining a higher salary and increasing a familiar environment. On the

other hand, gender is a significant factor that incentivizes slum dwellers to stay in the community (Badmos et al., 2020).

Marital status describes the component of household members, which also corresponds to household income affecting the migration decision. For example, studies indicate that marriage significantly influences slum dwellers' mobility (Bayrau & Bekele, 2007; Satu & Juthi, 2019). Regarding education attainment, Badmos et al. (2020) presume that education determines income, and the study proves a positive correlation between the highest educational level attained and the monthly income.

Household characteristics

The new economics emphasizes that families and households make migration decisions to preclude risk and maximize household well-being. Regarding household characteristics, age, as a life cycle variable, indicate that one more child per family increases the intention to move by 6.3% (T.-K. Kim et al., 2005). Similarly, in studies of Satu and Juthi (2019), Bayrau and Bekele (2007) find that family size is an essential factor influencing the residential mobility of slum dwellers. Likewise, household size can understand the crowding status space (Badmos et al., 2020), and slum dwellers with families are more remarkable than single to remain in the slum.

Furthermore, the dependency ratio implies the availability of utilizing the net income of each household, which often defines non-working and working family members (Lall et al., 2006) as family income is likely to find migrants' expression in shaping the area of movement and choice (Wolpert, 1965). It is noteworthy that a household's monthly income has significantly affected the probability of relocation decision-making (Bayrau & Bekele, 2007; Samuel & Nisar, 2021), and the factors related to employment and income influence the movers among slum dwellers to a great extent (Manaf et al., 2018; Satu & Juthi, 2019).

In different life cycles, the duration of living shows the dynamic mobility of slum dwellers (Badmos et al., 2020; Lall et al., 2006). A study point out that the duration of living an individual has lived in the same community increases, and the attractiveness may increase (Gould & Penley, 1985). In addition, many

migrants are brought to the city by relatives (Badmos et al., 2020), and the indirect effects of duration of residence imply that the longer individuals likely live in a neighborhood, the more friends they have (Samuel & Nisar, 2021; Speare, 1974). Moreover, Wolpert (1965) and Speare (1974) assume that friends and relatives affect the need to be paid more attention to in directing migration from birth to a generation which can be integrated into valuable indicators.

Regarding the type of tenure, many works of literature are divided into renter and owner to distinguish different opinions on willingness to resettlement (Badmos et al., 2020; Bayrau & Bekele, 2007; Speare, 1974). However, in the context of the Klong Toei community, there is no legal status of tenure as similar to the study mentions slums are often located on government or institute land (Satu & Juthi, 2019).

Occupational attributes

Occupations are the factors that migrants relocate to urban for better wages and opportunities as migrants are mainly motivated by economic considerations to relocate (Speare, 1974). Meanwhile, in the subsequent studies, Wolpert (1966) indicates that jobs affect migration decisions. Furthermore, Manaf et al. (2018) clarify that most slum dwellers work in the informal sector, such as entrepreneurs, street vendors, and low-income laborers. Low-income workers often experience more significant location constraints, such as limited access to proximity to skills-appropriate job opportunities (Badmos et al., 2020; Hess, 2005). Therefore, corresponding to the follow-up bullish urban development in Bangkok, residents' occupations, and job locations are the variables as a core study objective.

Figure 11 displays the conceptual framework of variables affecting the willingness to relocate into three categories: individual characteristics, household characteristics, and occupational attributes. The dependent variable (Y) is the relocation willingness by a four-Likert scale measurement. Individual characteristics include independent variables (X) of age, marital, gender, and educational attainment. In contrast, household characteristics consist of independent variables (X) of household members, the dependency ratio (children and elderly in the household), monthly household income, duration of living, relatives living in the community, close friends living in the community, and type of tenure. As core

independent variables (X) in this study, occupational attributes include job type and job location. Furthermore, variables extracted from the theory and literature review are listed in the figure accordingly.

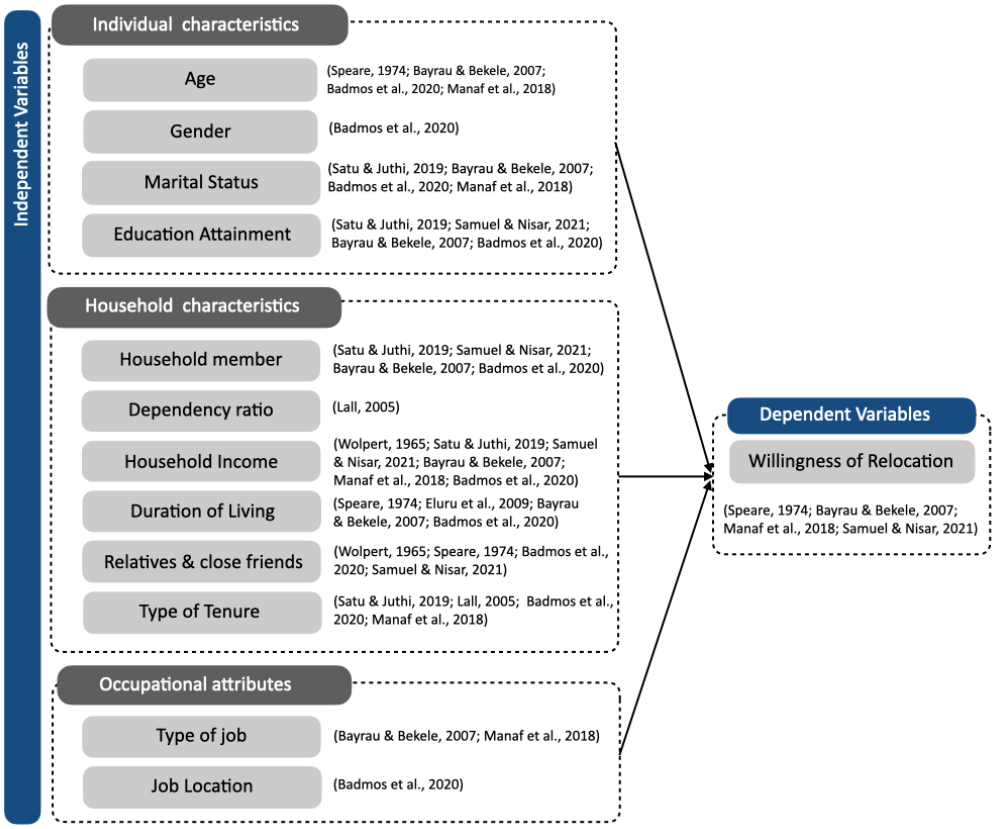

Figure 11 Conceptual framework of variables

Chapter 4 Data

This chapter consists of data collection, an explanation of the questionnaire design, and spatial data representing the respondent's job location in Bangkok. Furthermore, findings from conceptual content analysis depict interviewees' quotes from the perspective of generations disparity, job location, type of job, and transportation network leading to the distinct degrees of willingness to relocate, followed by descriptive statistics representing each variable's median and distribution.

4.1 Data collection

The data collection process conducted a pre-survey on 29th October 2022 to observe survey points and revise the questionnaire according to the pre-survey. Thus, the period of collecting data is from 27th November 2022 as the second pre-survey and between 7th December 2022 to 19th December 2022. The observation in the first pre-survey suggests most residents are out of the house or finish their work after 4 pm, and it is notable for obtaining consent from residents when they complete their primary purpose, such as withdrawing cash or shopping but only after scheduled activities. Meanwhile, it can be observed that the typical behavior of one resident is waiting outside for 5-10 mins on the motorcycle when their counterpart is shopping or doing other activities. However, the pre-survey reveals a high possibility of being refused by approximately half of the respondents, which tells the necessity to ask more respondents to reach the 90 samplings requirement.

Therefore, to obtain an appropriate sampling of residents' job locations while residents are off work, the survey time is set up for seven visits on weekdays and two on weekends from 4 pm to 6:30 pm generally to obtain ten samples per visit. Although the researcher attempts to gain a variety of respondents in the early 3 pm and late 8 pm, the resident's flow and traffic decrease dramatically, with very little likelihood of processing the questionnaire survey and interview. Additionally, considering the Thai social-cultural norm while conducting a survey, it is necessary to wear the student card as patches and explain the intention of this survey's leading content before respondents' consent. More importantly, inform respondents that no identity card registration is needed, and the researcher keeps this survey confidential and for

academic research use only. Moreover, it is impressive that some residents prefer direct eye contact with the researcher before consenting.

The data collecting points that have been selected include two spots nearby a bank ATM, a flea market next to Flat 12, and the entrance of the 70 Rai community for obtaining the equal sampling sizes of each community. The time consumed for an interview is about 10 to 15 mins. However, some respondents prepare for dinner or other purposes, requesting a short survey and conversation. On the other hand, depending on some respondents are willing to discuss their perception of the willingness to relocate and the problems they are facing in the community, which can be longer to about 20-25 mins.

An iPad is utilized during the survey, and the researcher writes a field note while asking participants the questionnaire. Since the researcher has lived in Bangkok for about nine years and can communicate in general Thai, an interpreter is not cooperating during the data collection process. The slight language barrier can be eliminated by asking for more details and recording participants shared information on iPad immediately. More importantly, the researcher repeats and concludes at the end of the conversation with participants to avoid misunderstanding the respondents' words. Thus, all 90 samplings are collected by the researcher.

The questionary design is in a short format within a page to convince the consent of respondents and shows to respondents while introducing the purposes of the research. General questions such as age and marital status are at the beginning of the interview, followed by sensitive questions related to the job location or monthly income in the middle of the interview. The willingness to relocate in the last section is because many respondents may require time to reply to the four-Likert scale—finally, the semi-structured question functions as the interaction opportunity between respondents and the researcher.

The process of collecting data is smooth and delightful, and residents who agreed to participate in the survey are cooperative and very polite. However, following the research ethnic review, a respondent changes his mind and quit the survey in the middle of the interview. Additionally, a cash incentive is provided to show the gratefulness of cooperation to respondents. Interestingly, approximately 71% of

respondents refuse to take the incentives, as most claim they merely want to support the survey. Table 7 represents the questionnaire design for interviewing residents and follows the explanation of the questionnaire in English.

Table 7 Questionnaire for interviewing residents in Klong Toei community (in Thai)

แบบสำรวจความเต็มใจต่อการย้ายที่อยู่เพื่อไปตั้งรกรากใหม่

ปัจจุบันคุณอาศัยอยู่ในพื้นที่ใด ❍ ล็อค ❍ 70 ไร่ ❍ แฟลต

ส่วนที่ 1: ข้อมูลส่วนบุคคล

P1-Q1. ตอนนี้คุณอายุเท่าไร: อายุ _____ ปี

P1-Q2. สถานภาพสมรสของคุณคือ:

o โสด o สมรส o หย่า o แยกกันอยู่ o คู่สมรสเสียชีวิต

P1-Q3. มีคนอยู่อาศัยในครัวเรือนเดียวกันกับคุณกี่คน รวมทั้งตัวคุณด้วย: _____คน

P1-Q3.1. มีเด็กอายุต่ำกว่า 15 ปีอาศัยอยู่ด้วยกันหรือไม่? ไม่มี มีจำนวน_____คน

P1-Q3.2. มีผู้สูงอายุที่มีอายุตั้งแต่ 60 ปีขึ้นไปอาศัยอยู่ด้วยหรือไม่? ไม่มี มีจำนวน_____คน

P1-Q4. ระดับการศึกษาขั้นสูงสุดของคุณ:

o จบการศึกษาระดับประถมศึกษาหรือต่ำกว่า

o จบการศึกษาระดับมัธยมศึกษาตอนต้น

o จบการศึกษาระดับมัธยมศึกษา หรือจบการศึกษาระดับปวช

o จบการศึกษาระดับอุดมศึกษาในมหาวิทยาลัยและสูงขึ้นไป หรือจบการศึกษาในระดับปวส

P1-Q5. ปัจจุบันคุณทำอาชีพหลักอะไร? _____

P1-Q5.1. สถานที่ทำงานหลักของอยู่ที่ไหน? โปรดระบุตำแหน่งที่ทำงานของคุณบนแผนที่ของกูเกิล

P1-Q6. ใน 1 เดือน รวมๆกันแล้วทั้งครัวเรือนของคุณมีรายได้รวมเป็นเท่าใด? (หน่วย: บาท)

o น้อยกว่า 5000 บาท o ระหว่าง 5000 ถึง 20,000 บาท o ระหว่าง 20,000 ถึง 50,000 บาท

o ระหว่าง 50,000 ถึง 100,000 บาท o มากกว่า 100,000 บาทขึ้นไป

ส่วนที่ 2: สิ่งต่างๆที่ยึดโยงคุณเข้ากับชุมชน

P2-Q1. ข้อใดอธิบายลักษณะสถานะการอยู่อาศัยของคุณในปัจจุบันได้ตรงความจริงมากที่สุด?

o เป็นผู้อาศัย ที่ได้ทำสัญญาการอยู่อาศัยกับเจ้าของที่ดินอย่างเป็นทางการ o เป็นผู้เช่าแบบเช่าช่วง

o เป็นผู้อาศัยอยู่ โดยไม่มีการทำสัญญาการอยู่อาศัยอย่างเป็นทางการกับเจ้าของที่ดิน o อื่นๆ

P2-Q2. จนถึงปัจจุบัน คุณอาศัยอยู่ในชุมชนคลองเตยมานานเท่าใดแล้ว? ทั้งหมด _____ ปี

P2-Q3. คุณมีญาติที่อาศัยในชุมชนคลองเตยทั้งหมดกี่คน? _____ คน

P2-Q4. คุณมีเพื่อนสนิทที่อาศัยอยู่ในชุมชนคลองเตยทั้งหมดกี่คน? _____ คน

ส่วนที่ 3: ความเต็มใจต่อการย้ายที่อยู่เพื่อไปตั้งรกรากใหม่

P3-Q1. คุณรู้สึกเต็มใจหรือไม่ที่จะย้ายที่อยู่เพื่อไปตั้งรกรากใหม่ หรือมีโอกาสมากน้อยเพียงใดที่คุณจะรู้สึกเต็มใจที่จะย้ายที่อยู่เพื่อไปตั้งรกรากในที่ใหม่?

o ไม่เต็มใจอย่างมาก หรือ มีความเป็นไปได้ที่จะเต็มใจน้อยมากๆ

o ไม่เต็มใจ หรือมีความเป็นไปได้ที่จะเต็มใจน้อย

o รู้สึกเต็มใจอยู่บ้าง หรือมีความเป็นไปได้ที่จะเต็มใจ

o รู้สึกเต็มใจ หรือมีความเป็นไปได้มากที่จะรู้สึกเต็มใจ

P3-Q2. สมมุติว่าคุณจะย้ายที่อยู่เพื่อไปตั้งรกรากใหม่ มีปัจจัยสำคัญอะไรบ้างที่ส่งผลต่อการไปตั้งรกรากใหม่?

o สภาพแวดล้อมของสถานที่อยู่อาศัยที่จะย้ายไปตั้งรกรากใหม่

o ค่าใช้จ่ายในการขนย้าย

o สถานที่อยู่อาศัยใหม่นั้นใกล้เคียงกับใจกลางเมืองหรือไม่

o ความผูกพันทางสังคมที่มีอยู่กับคนในชุมชนคลองเตย

o สถานที่อยู่ใหม่นั้นจะใกล้สิ่งอำนวยความสะดวกต่างๆ เช่น โรงเรียน ตลาด หรือไม่

o ปัจจัยอื่นๆ

หากคุณตอบว่าปัจจัยอื่นๆ กรุณาบอกว่าปัจจัยนั้นคืออะไร พร้อมทั้งอธิบายแบบสั้นๆ

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Questionnaire design

The questionnaire is translated from English to Thai, assisted by Thai national colleagues, and seeking comments from the thesis advisor. Considering the researcher's Thai language ability and the level of understanding of Thai respondents in the Klong Toei community, the form set up a basic Thai proficiency so respondents can read it easily. The research oversees recording the information given by respondents on iPad and showing the questionary to respondents to avoid ambiguous understanding of the question. At the beginning of the survey, the respondents are asked which community they lived in. It is not only for acquiring the sampling design of 30 respondents in each community but also to exclude respondents who do not live in the community. The questionnaire is divided into three sections; the first is about individual and household characteristics and occupational attributes, followed by community-related questions, then the willingness to relocate, and a semi-structured question for further discussion of factors influencing the willingness to relocate.

In the first section, the first question is, "How old are you now?" The second question is, "What is your marital status?" options include single, married, separated, divorced, and widows. The third question is, "How many people live together in the household, including yourself?". To further investigate the dependency ratio, the sub-question is asked, "How many children are under the age of 15 years old in the household?" and "How many elderly people above 60 years old in the household?". The fourth question is "What is your educational attainment?" options include elementary school education (Bo 1 to Bo 6) and under, junior high school (Mo 1- Mo 3), secondary school (Mo 4- Mo 6), or vocational degree, and higher education at university, or with a higher vocational degree.

As the core question occupational attribute in this survey, the fifth question is "What your main occupation is now?" followed by the sub-question, "Where your job location is? "And please pinpoint from Google Maps on iPad. The sixth question is "How much income can be earned in a month, including all the members living in the household?" options are given a range from less than 5000 baht, 5000 to 20,000 baht, 20,000 to 50,000 baht, 50,000 to 100,000 baht, and more than 100,000 baht. Questions one to six correspond to independent variables, namely, Age, Marital status, Household components, and specify

Children and Elderly in the household, Education attainment, Type of Job, Job location in the distance, and monthly household income.

In the second section, the first question is, please choose from the options below that represent primarily close to your type of tenure. Options include residents with contracts with the landowner, sub-renter, residents without contracts with the landowner, and others. The second question is "How long you have been living in the community until now?" while the third and fourth questions are "How many relatives do you have living in the Klong Toei community?" and "How many close friends do you have living in the Klong Toei community?", respectively. Questions one to four correspond to independent variables: Type of tenue, Duration of living, Relatives in the community, and Friends in the community.

In the third section: willingness to relocate, the first question is, "Do you feel willing to relocate to settle in a new place, or how likely are you to feel willing to relocate to a new place?". Options include very improbable to move, improbable to move, probable to move, and very probable to move. The second question is, let us say you are moving to a new residence. "What are the important factors that affect resettlement?". Options include the environment of the house units, the cost of moving, close to the city center, the social bond with people in the Klong Toei community, and proximity to facilities such as schools, markets, and other factors. Question one corresponds to the dependent variable in the four Likert scale, willingness to relocate, while question two aims to open conversation with respondents so that they can express their notions and opinions when considering moving to a new place.

4.2 Spatial data

Job location map

During the face-to-face interview, respondents are asked to point out their job location through Google Maps on iPad. Most respondents are willing to do so, while only a few agree that the center of the area they provided is their job location. Figure 12 illustrates the respondents' job locations in three communities. It can be interpreted that residents in Lock are close to the centroid and work within the Klong Toei community and surrounding districts. In contrast, residents in 70 Rai are more likely to work far away from the Klong Toei community than others. The attribute of residents in Flat has a higher percentage of working in the private office sector, which can be seen because the job location is close to the central business district of Bangkok. Moreover, the minimum job location in the distance is 0.08 km within the community; in turn, the maximum job location is 34.7 km in the Nong Chok district.

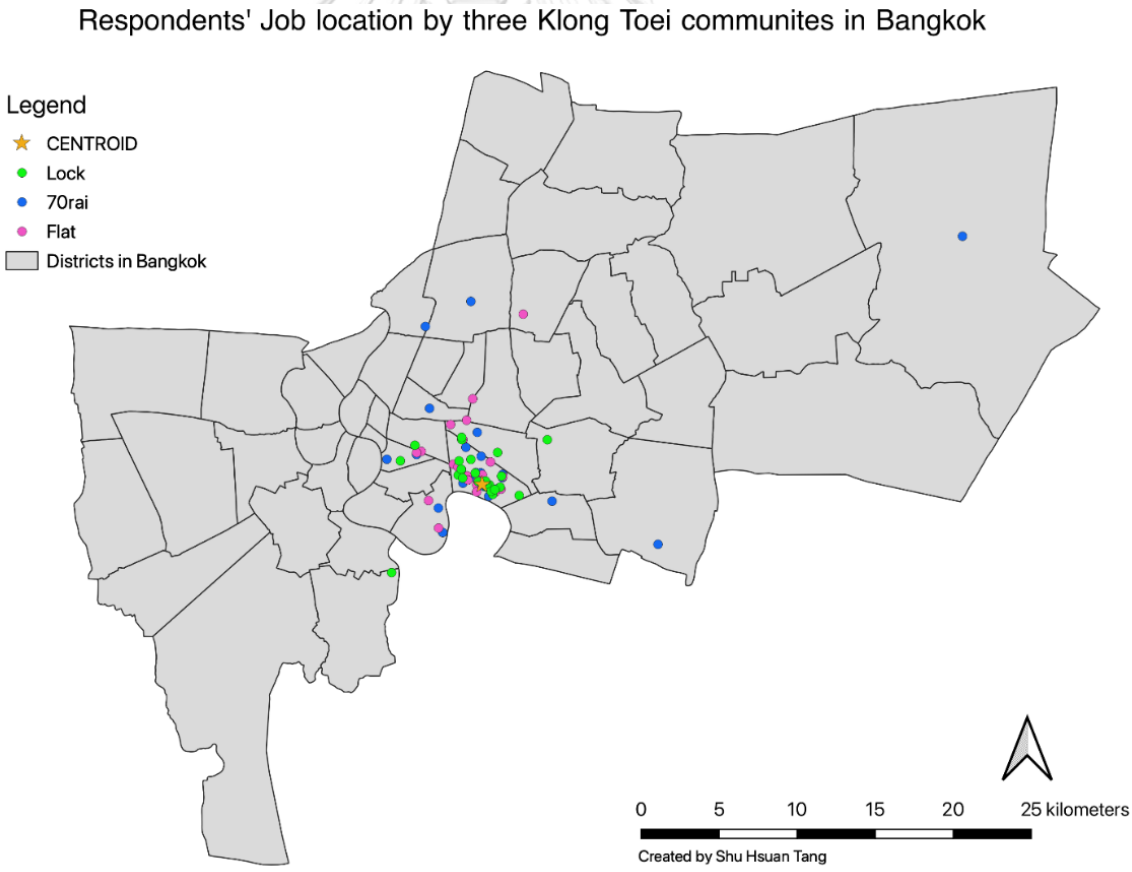

Figure 12 Respondents' Job location by three Klong Toei communities in Bangkok

Distribution of Klong Toei residents' Job location

The standard deviational ellipse outlines the geographical distribution trend by summarizing the dispersion and orientation of the observed data. It is determined by average location, dispersion or concentration, and orientation through delineating spatial point data via GIS (Wang et al., 2015). The locus of the standard deviation values yields the ellipse as the axis rotates around the mean center (Lefever, 1926). As can be seen, Figure 13 illustrates the job locations of Klong Toei residents as green points showed. The red point indicates the mean center of job locations, while the purple point indicates the median center of job locations.

Furthermore, the overlaid standard deviational ellipse represents the distribution of job locations. Overall, the map shows an intuitive visualization of the spatial distribution of Klong Toei residents' job locations, which explains that the concentration patterns of job locations are highly centralized in the Klong Toei district. More specifically, a considerable number of residents are working within the community.

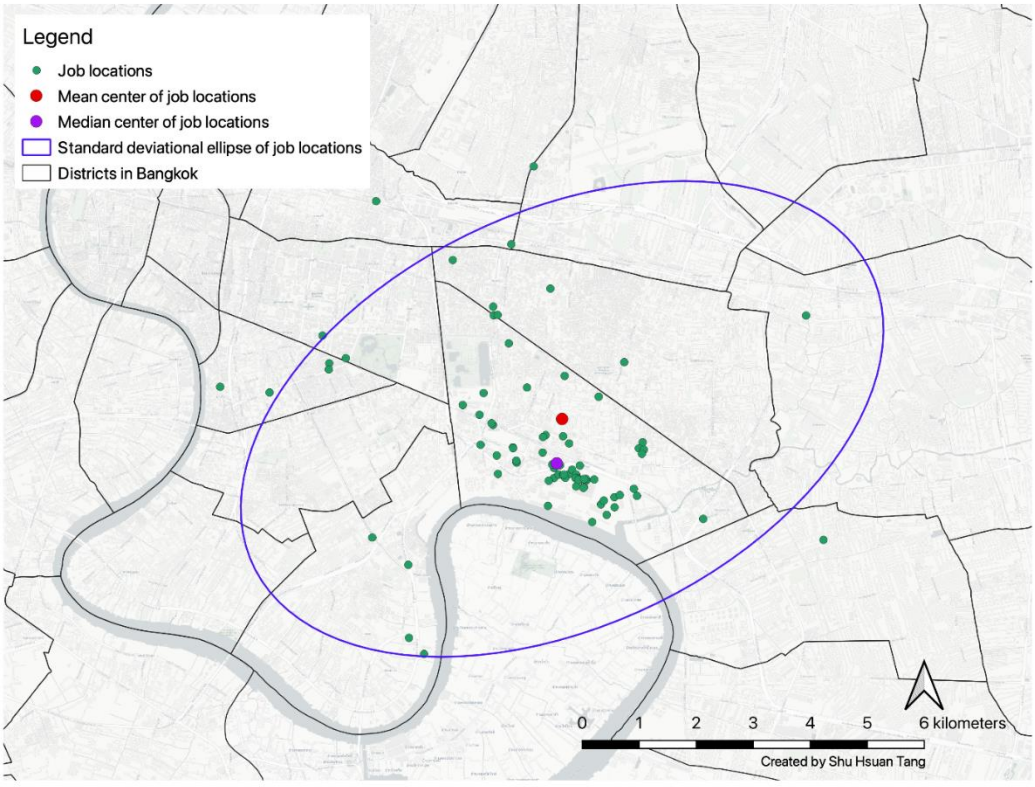

Figure 13 Distributions of Klong Toei residents' job location

4.3 Interviewees

A semi-structured questionnaire is set up during the face-to-face interview to attain further conversation with respondents. Six options are explained carefully in Thai and evaluate the perception of each option whether the respondents replied directly, namely, the environment of the housing unit, cost of moving, location close to the city center, social ties, proximity to facilities such as school or market, and others if respondents have their own words. Few respondents declare that all options are essential, while many prefer to pick up two to three options. It is encouraged to tick multi options to respect respondents' voices as it aims to further discussion and interaction with residents.

In terms of Job location, there are 24 out of 30 respondents in Lock and 19 out of 30 respondents in 70 Rai are working within 3 km, while five respondents in Lock six respondents in 70 Rai working between 3-6 km. On the other hand, only one respondent works over 6 km in Lock, but five respondents in 70 Rai over 6km. Regarding the type of job, Maid, accounting for 11.1% of the total 90 samples, sales and work for hire is a majority group, accounting for 33.3% of total samples. Furthermore, private office workers and the professional sector accounted for 31%, followed by the logistics and transportation, and business sectors, accounting for 13.3% and 3.3%, respectively. In addition, 34 out of 90 respondents are born and raised in the community, 15 in Lock account for the most, 11 in 70 Rai, and 8 in Flat.

For the homogeneous population in the Klong Toei community, Figure 14 illustrates that residents in 70 Rai have less willingness to relocate, followed by residents in Lock. Interestingly, in Lock, the degree of very improbable to move has a higher portion compared to 70 Rai, which implies that residents in Lock are born and rise in the community leading to the unwillingness to relocate. On the contrary, residents in Flat are more willing to move than Lock and 70 Rai, accounting for 60%. The combination of the job location map and the figure of willingness to relocate does not indicate that the far away respondents' job location, the higher willingness to move in 70 rai. On the other hand, it implies that the closer to respondents' job location, the lower their willingness to move in Lock as a whole. However, residents in Flat are the different groups no matter the distance of job location, corresponding to a willingness to move.

Thus, the context analysis approach first divides respondents into two groups, Lock, 70 Rai, and Flat. Second, grouping by the willingness to relocate, then subdivide according to the different age groups. The following section explains the perception of residents' willingness to relocate and how different generations lead to a different willingness to relocate. Moreover, some residents prefer to have their opinion for the semi-structured questionary, which emphasizes that job location is the most crucial factor when considering relocating. Thus, job location impacts have been lifted in the content analysis findings. As the majority of residents, nearly half, work within 1 km of the community, the type of jobs by community distribution is addressed. Lastly, some residents convey the importance of being close to the transportation network nearby the community is also a vital factor reflecting residents' willingness to relocate. The following section explains the perception of residents' willingness to relocate and how different generations, job locations, types of jobs, and transportation networks lead to a distinguishable willingness to relocate.

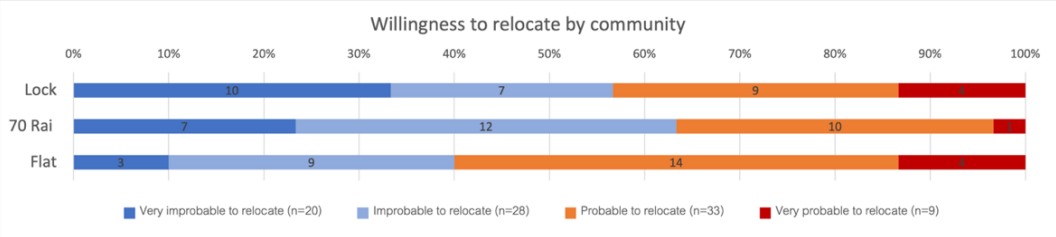

Figure 14 Willingness to relocate by three Klong Toei communities

4.3.1 Generation disparity

In many studies, the social tie is likely a critical factor leading to residents preferring to stay; however, in the modern Klong Toei community, the social tie is less vital than in previous studies. On the contrary, age appears as a significant factor affecting the willingness to relocate, such as the young generation aged between 17-25 years old being more willing to move than the age greater than 36 in Lock and 70 Rai. Furthermore, it is noteworthy that Generation Z is likely to be more willing to move due to environmental concerns such as a safer environment for children growing up.

Improbable to move in Lock and 70 Rai

"I feel improbable to move. It does not matter how the works at PAT, it is just my income resource. If moving to somewhere, I may find other jobs nearby but not commute back to PAT." (Lock respondent 13, Age 32)

"The environment in the community has been improved much better compared to before that I feel improbable to move because. But honestly to say as everyone knew it, the drag problems are serious." (70 rai respondent 26, Age 47)

“I am living here 35 years with six children and one elderly and work at Soi Kheha. I feel very improbable to move because the rental I pay is only 120 baht per month." (70 Rai respondent 3, Age 55)

“I have been living here for 45 years, and I am the only income source in a six persons household, including four children. I do not want to move out because I am afraid of losing social tie." (Lock responded 1, Age 53)

“I do not feel probable to move as I was born and raised in a community where social ties are important. No matter if my musician job requires travel to many places and places I performed frequently are far away." (70 Rai respondent 7, Age 56)

“I am working in Nong Chok district by two tiao transportation. I do not feel probable to move because it is convenient to reach anywhere because close to the city center. However, there will be transportation problems if outside of the city." (70 Rai respondent 2, Age 56)

The distribution of residents shows an improbable to relocate in different age groups are summarized as follows. In the group 17-25 years old, Lock respondents 11,20,24 and 70 Rai respondents 15,22. In the group 26-35 years old, Lock respondents 9,13,23,25,27, and 70 Rai respondents 5,6,17.

Furthermore, the majority group is 36-45 years old, Lock respondents 3,7,15,21 and 70 Rai respondents 4,7,8,11,14,25. In the group 46-55 years old, Lock respondents 1,26 and 70 Rai respondents 3,21,26,30. In the group 56-65 years old, Lock respondents 10,19,30 and 70 Rai respondents 2,23,24,29.

Probable to move In Lock and 70 Rai

"I have been living here since born, but I feel probable to move because I do not like the atmosphere of flighting. Also, the drag problem is a bit too much that I would like to move to a better environment." (Lock respondent 8, Age 18)

"I was born and raised in the community. I am very probable to move that I consider providing the children a better environment not seeing drag users when they grow up." (Lock respondent 22, Age 27)

"As a second generation born and raised here, I believe that moving away is beneficial for my 70 years old father practically, reduce the problems and make life easier." (70 rai respondent 1, Age 40)

"I am very probable to move out even though I have lived here 45 years with many relatives. but I have no close friends because I do not want to be busy with others." (Lock respondent 5, Age 56)

The distribution of residents shows a probable to relocate in different age groups are summarized as follows. In the group 17-25 years old, Lock respondents 6,17,29 and 70 Rai respondents 16,20,27,28. Furthermore, the majority group is 26-35 years old, Lock respondents 8,12,14,18,22,28, and 70 Rai respondents 10,13,19. In the group 36-45 years old, Lock respondents 2,16,4 and 70 Rai respondents 12,18,1. Moreover, the minority group is 46-55 years old, 70 Rai respondents 9 and 56-65 years old, Lock respondents 5.

Improbable to move in Flat

"I have lived here since I was born. I have been working for PAT for ten years and pretty much like the job I am doing. Also, it is very close to my house." (Flat respondent 5, Age 31)

"Even though I feel improbable to move, I prepare plan B which is I will move to the Bang Na area because the housing price fits within my budget, and it is also easy to access another province or come to the city." (Flat respondent 23, Age 32)

"I lived in a benefit house offered by a company that I feel improbable to move. Convenient access to MRT can save time. Nevertheless, the capacity of the road remains the same, leading to container trucks causing heavy traffic jams." (Flat respondent 19, Age 33)

“I am a sub-renter living here 10 years. I feel improbable to move due to the cost of moving. If considering where to move, I prefer to land at Nong Chok district, but not the condo nearby.” (Flat respondent 11, Age 52)

"I feel very improbable to move. The questions are where to move, rental, safety, income, what kind of job, and how many hours work a day. Besides, if the police station I work for is no longer here, where are they supposed to go?" (Flat respondent 8, Age 60)

The distribution of residents shows an improbable to relocate in different age groups are summarized as follows. In the group 17-25 years old, respondents 3,6,22. Similarly, in the group 26-35 years old, respondent 4,19,23, and in the group 36-45 years old, respondent 12,20,21. The minority group is 46-55 years old, respondent 11,27, and the group is 56-65 years old, respondent 8.

Probable to move in Flat

" I work at PAT as a repairing technician, and my family owns the house. However, I feel probable to move for a better living environment. " (Flat respondent 29, Age 22)

"I do feel probable to move. But the reality is I do not have enough money to buy a home and the low possibility to access load from the bank that I wish PAT can offer load for buying a house." (Flat respondent 17, Age 33)

"My mom bought the house that I have lived here for 19 years. I feel probable to move, and proximity to the facility would be my consideration when relocating." (Flat respondent 13, Age 40)

"I feel bored after living nine years in the community that I really want to move out. But I have to think where my two kids can go to school." (Flat respondent 1, Age 60)

The distribution of residents shows probable to relocate in different age groups are summarized as follows. The majority group is 17-25 years old, with respondents 2,7,16,24,26,29,30. In the group 26-35 years old, respondents 9,17,25. In the group 36-45 years old, respondents 4,10,13,14. However, the minority group 46-55 years old, respondents 15,28, and group 56-65 years old, respondents 1,18.

The findings from the residents' quotes and distribution of different age groups indicate that generation disparity plays a vital role in determining the relocation decision. Notably, ages between 17-35 are more willing to move, and these findings also appear in the three communities. Despite the assumption that residents born and raised in the community are likely improbable to move generally, the survey finds that 34 respondents were born and raised in the community. However, the qualitative findings reveal that another aspect of the second generation is keen to move because of the uncomfortable fighting status for compensation or with neighbors. Moreover, in Lock, there is a minority of senior residents with a longer duration of living who express that they are likely to move due to better economic status and some

friendship issues in the community. Table 8 summarize the respondent quotes in Lock, 70 Rai. Table 9 summarize the respondent quotes in Flat regarding their perception of the willingness to relocate.

Table 8 Summary of age groups by willingness to relocate in Lock and 70 Rai

Lock and 70rai

Age groups	Respondent quotes
Very improbable and improbable to move	
17-25 years old	-
26-35 years old	"I feel improbable to move. It does not matter how the works at PAT, it is just my income resource. If moving to somewhere, I may find other jobs nearby but not commute back to PAT." (Lock respondent 13, Age 32)
36-45 years old	"I have approximately 50 close friends since living in the community for 20 years. I think job location is most important. If the foundation is not here anymore, I cannot continue to teach those kids." (Lock respondent 3, Age 38) "The environment in the community has been improved much better compared to before that I feel improbable to move because. But honestly to say as everyone knew it, the drag problems are serious." (70 rai respondent 26, Age 47)
46-55 years old	"I am living here 35 years with six children and one elderly household and work at Soi Kheha. I feel very improbable to move because the rental I pay is only 120 baht per month." (70 Rai respondent 3, Age 55) "I have been living here for 45 years and am the only income source in a six persons household, including four children. I do not want to move out because I am afraid to lose the social tie." (Lock responded 1, Age 53)
56-65 years old	"I do not feel probable to move as I was born and raised in the community which social tie is important. No matter if my musician job requires travel to many places and places I performed frequently are far away." (70 Rai respondent 7, Age 56) "I am working in Nong Chok district by two tiao transportation. I do not feel probable to move because it is convenient to reach anywhere close to the city center. However, there will be transportation problems outside of the city." (70 Rai respondent 2, Age 56)
Pobable and very probable to move	
17-25 years old	"I have been living here since born, but I feel probable to move because I do not like the atmosphere of flighting. Also, the drag problem is a bit too much that I would like to move to a better environment." (Lock respondent 8, Age 18)
26-35 years old	"I was born and raised in the community. I am very probable to move that I consider providing the children a better environment not seeing drag users when they grow up." (Lock respondent 22, Age 27)
36-45 years old	"As a second generation born and raised here, I believe that moving away is beneficial for my 70 years old father practically, reduce the problems and make life easier." (70 rai respondent 1, Age 40)
46-55 years old	-
56-65 years old	"I am very probable to move out even though I have lived here 45 years with many relatives. but I have no close friends because I do not want to be busy with others." (Lock respondent 5, Age 56)

Table 9 Summary of age groups by willingness to relocate in Flat

Flat

Age groups	Respondent quotes
Very improbable and improbable to move	
17-25 years old	"I lived here since I was born. I have been working for PAT for ten years and pretty much like the job I am doing. Also, it is very close to my house." (Flat respondent 5, Age 31)
26-35 years old	"Even though I feel improbable to move, I prepare plan B which is I will move to the Bang Na area because the housing price fits within my budget, and it is also easy to access another province or come to the city." (Flat respondent 23, Age 32) "I lived in a benefit house offered by a company that I feel improbable to move. Convenient access to MRT can save time. Nevertheless, the capacity of the road remains the same, leading to container trucks causing heavy traffic jams." (Flat respondent 19, Age 33)
36-45 years old	-
46-55 years old	"I am a sub-renter living here 10 years. I feel improbable to move due to the cost of moving. If considering where to move, I prefer a land at Nong Chok district, but not the condo nearby." (Flat respondent 11, Age 52)
56-65 years old	"I feel very improbable to move. The questions are where to move, rental, safety, income, what kind of job, and how many hours work a day. Besides, if the police station I work for is no longer here, where are they supposed to go?" (Flat respondent 8, Age 60)
Probable and very probable to move	
17-25 years old	" I work at PAT as a repairing technician and my family owns the house. However, I feel probable to move for a better living environment. " (Flat respondent 29, Age 22)
26-35 years old	"I do feel probable to move. But the reality is I do not have enough money to buy a home and the low possibility to access load from the bank that I wish PAT can offer load for buying a house." (Flat respondent 17, Age 33)
36-45 years old	"My mom bought the house that I have lived here for 19 years. I feel probable to move, and proximity to facility would be my consideration when relocating." (Flat respondent 13, Age 40)
46-55 years old	-
56-65 years old	"I feel bored after living nine years in the community that I really want to move out. But I have to think where my two kids can go to school." (Flat respondent 1, Age 60)

4.3.2 Job location impacts

A semi-structured questionary at the end of the survey aims to interact with residents and ask about essential factors while considering moving to other places. The majority of residents favor the housing environment and proximity to the facility. However, some residents prefer to voice their perception of which job location is the most critical factor when making relocation decisions. Table 10 Summarize respondents who quote job location as the most significant factor while considering moving.

Improbable to move

“I am a street cleaner working for Gotomo in the morning and being a motorcycle taxi in the afternoon. I feel very improbable to move because this community is close to my job location." (70 Rai respondent 21)

“I have approximately 50 close friends since living in the community for 20 years. I think job location is most important. If the foundation is not here anymore, I cannot continue to teach those kids." (Lock respondent 3)

“Because of the cheaper rental and close to job location, I feel improbable to move. I appreciated getting much help from the neighbors in the community due to the limitation, I lost both hands." (70 Rai respondent 22)

Probable to move

"I had an office admit job and still studying in university now. I feel probable to move, and job location is the most critical factor, but no other factors list from the questionary." (70 Rai respondent 27)

“The reason why I moved here is that my job location is close to this community. I feel probable to move as I live here for two years." (70 Rai respondent 20)

“I share the flat with my close friend and have lived in the community just one year because my job location is nearby." (Flat respondent 2)

“I am an office worker living in the community for three years. Locating in the inner city, which is close to the job location, is most influential for me." (Flat respondent 16)

"I moved here merely four months because my job location is just located in the junction nearby. Also, because my boyfriend works for PAT that we are living in the benefit house provided by PAT." (Flat respondent 30)

"I have lived in the community for three years and feel probable to relocate. From my point of view, job location, monthly income, inflation, and language skills create more opportunities and job choices." (70 Rai respondent 9)

"I am the house owner living in the community for 16 years. I feel probable to move, and if it is a must to choose compensation, I will relocate to a condo nearby, because it is easy to my workplace." (Flat respondent 10)

Residents express that job location is the most significant factor when considering moving. Nevertheless, the majority of residents are likely willing to relocate, such as 70 Rai respondents 27,20,9 and Flat respondents 2,10,16,30. In comparison, 70 Rai respondent 21,22 and Lock respondent 3 emphasize the importance of job location, showing an improbable willingness to relocate. The finding also depicts that the perception of job location in the distance somehow differs between respondents. For example, residents who work more than 4km still recognize that the community is close to the job location.

Table 10 Summary of job location impacts

Job location impacts	Respondent quotes
Very improbable and improbable to move	
Proximity to job location	"I am a street cleaner working for Gotomo in the morning and being a motorcycle taxi in the afternoon. I feel very improbable to move because this community is close to my job location." (70 Rai respondent 21)
	"Because of the cheaper rental and close to job location, I feel improbable to move. I appreciated getting much help from the neighbors in the community due to the limitation, I lost both hands." (70 Rai respondent 22)
Losing job location	"I have approximately 50 close friends since living in the community for 20 years. I think job location is most important. If the foundation is not here anymore, I cannot continue to teach those kids." (Lock respondent 3)
Probable and very probable to move	
Job opportunity	"I had an office admit job and still studying in university now. I feel probable to move, and job location is the most critical factor, but no other factors list from the questionary." (70 Rai respondent 27)
	"I have lived in the community for three years and feel probable to relocate. From my point of view, job location, monthly income, inflation, and language skills create more opportunities and job choices." (70 Rai respondent 9)
	"The reason why I moved here is that my job location is close to this community. I feel probable to move as I live here for two years." (70 Rai respondent 20)
Move in due to job location nearby	"I share the flat with my close friend and have lived in the community just one year because my job location is nearby." (Flat respondent 2)
	"I am an office worker living in the community for three years. Locating in the inner city, which is close to the job location, is most influential for me." (Flat respondent 16)
	"I moved here merely four months because my job location is just located in the junction nearby. Also, because my boyfriend works for PAT that we are living in the benefit house provided by PAT." (Flat respondent 30)
Proximity to job location	"I am the house owner living in the community for 16 years. I feel probable to move, and if it is a must to choose compensation, I will relocate to a condo nearby, because it is easy to my workplace." (Flat respondent 10)

4.3.3 Job types homogeneity

Nearly half of the respondents are working within 1 km of the community. The tendency of job types such as working at home and selling goods online is likewise blooming in the modern era of the Klong Toei community. Inevitably, residents working within the community are likely to have a greater proportion of saying they are improbable to relocate. However, on the other hand, some residents show a different degree of willingness to relocate because the flexibility of working at home means they can work elsewhere. Furthermore, the type of jobs in the retail and services sector has a greater proportion of improbable to relocate in 70 Rai, followed by Flat. Table 11 represents job types of respondents who work within 1km of the community.

Improbable to move

"I am doing online selling business. As a house owner, I feel very improbable to move because I just rebuild my house for a better living environment." (Lock respondent 27)

"My job is work for hire and working in a motos company at soi 35. I feel very improbable to move because I live and work in the same community" (70 Rai respondent 8)

" I think the market nearby makes life easier as I am selling food in the market so that I feel improbable to move." (Flat respondent 12)

" I am a private business owner managing maid that I can contact and done my job at home. Many benefits being live in the city center, like transport to work, school or anywhere." (Lock respondent 15)

The distribution of the type of job who work within the community indicates an improbable willingness to relocate is summarized as follows. The majority of respondents work in the retail and service sector, Lock respondents 19,7,30,12, 70 Rai respondents 3,4,8,23,24,25,30 and Flat respondents 3,6,8,11,12,21 followed by Lock respondents 21, 70 Rai respondents 17, and Flat respondent 19 in the logistics and transportation sectors. In the private office sector, Flat respondent 20. In the professional sector, Lock respondents 3,10. Lastly, in the business sector, Lock respondent 15,27.

Probable to move

"I am selling goods on Facebook and will probably move back to my hometown. I suggest PAT offer more options for compensation due to some minority groups trying to negotiate a higher cash compensation." (Lock respondent 14)

"I feel probable to move although I was born and raised in the community for 38 years. As a tattoo technician, my home is the workplace as a studio." (Lock respondent 16)

"I am an outsource office worker related to PAT. Since I was born and living in the community for 22 years, I feel probable to relocate." (70 Rai respondent 28)

The distribution of the type of job who work within the community indicates a probable willingness to relocate is summarized as follows. Respondents work in the retail and service sector, Lock respondents 11,14, 70 Rai respondent 25, and Flat respondents 15,18. In the logistics and transportation sectors, Lock respondent 22, 70 Rai respondent 16, and Flat respondent 1,25. The majority of residents working in the private office sector are 70 Rai respondents 13,27,28, and Flat respondent 9. In the professional sector, Lock respondent 4 and Flat respondent 29. Lastly, in the business sector, Lock respondent 16.

Table 11 Summary of job types and work within 1km of the community

Type of job	Respondent quotes
Very improbable and improbable to move	
Business	"I am doing online selling business. As a house owner, I feel very improbable to move because I just rebuild my house for a better living environment." (Lock respondent 27)
Retail and services	"My job is work for hire and working in a motos company at soi 35. I feel very improbable to move because I live and work in the same community" (70 Rai respondent 8)
Retail and services	" I think the market nearby makes life easier as I am selling food in the market so that I feel improbable to move." (Flat respondent 12)
Business	" I am a private business owner managing maid that I can contact and done my job at home. Many benefits being live in the city center, like transport to work, school or anywhere." (Lock respondent 15)
Probable and very probable to move	
Retail and services	"I am selling goods on Facebook and will probably move back to my hometown. I suggest PAT offer more options for compensation due to some minority groups trying to negotiate a higher cash compensation." (Lock respondent 14)
Professional	""I feel probable to move although I was born and raised in the community for 38 years. As a tattoo technician, my home is the workplace as a studio." (Lock respondent 16)
Private office	"I am an outsource office worker related to PAT. Since I was born and living in the community for 22 years, I feel probable to relocate." (70 Rai respondent 28)

4.3.4 Transportation network

During the interaction semi-structured questionary, some residents emphasize the importance of transportation as the critical factor when considering moving to other places. The findings indicate that the closer the distance to the job location, the stronger unwillingness to relocate. Moreover, an impressive phenomenon is that residents who quote transportation all show an improbable willingness to relocate. Table 12 represents respondents who quote transportation's importance and the downside of traffic jams.

Improbable to move

"The benefit of living near the city center is that children can go to school more easily. Also, transport to work and anywhere you want to go." (Respondent Lock 15)

"I have lived in the community for 56 years since birth and work within 70 rai to repair housing problems. I think transportation is the most crucial factor when considering moving." (Respondent Lock 19)

"I think nothing related to the cost of moving and staying in the inner city when considering moving. Having a market in the community makes it easy to get food and buy stuff, but it always brings traffic jams." (Respondent Lock 7)

"The advantage of living here is convenient transportation. Many people commute for more than one hour, so access to MRT can save time. But the downside is heavy traffic jams caused by container trucks." (Respondent Flat 19)

"I am too old to find food (job), so I have to wake up at 4 am to catch two tiao to my workplace. Sometimes I miss the two tiao cars, and it takes a lot of time to transport back home." (Respondent 70 Rai 29)

"The convenience factor is most critical for me because the highway nearby can access other provinces or come to the city easily." (Respondent Flat 23)

"I work in Nong Chok by taking two tiao cars early morning. If the new place is outside of the city, I will have problems with transportation. So, if in the city center, no matter where I can reach there." (Respondent 70 Rai 2)

The distribution of residents who quote transportation and traffic jams issues indicates an improbable willingness to relocate is summarized as follows. Lock respondents 7,15,19, 70 Rai respondent 2,29, and Flat respondents 19,23.

Table 12 Summary of importance of transportation network

Transportation network	Respondent quotes
Very improbable and improbable to move	
Convenience of transportation	"The benefit of living near the city center is that children can go to school more easily. Also, transport to work and anywhere you want to go." (Respondent Lock 15)
	"I have lived in the community for 56 years since birth and work within 70 rai to repair housing problems. I think transportation is the most crucial factor when considering moving." (Respondent Lock 19)
	"The convenience factor is most critical for me because the highway nearby can access other provinces or come to the city easily." (Respondent Flat 23)
Traffic jams	"I think nothing related to the cost of moving and staying in the inner city when considering moving. Having a market in the community makes it easy to get food and buy stuff, but it always brings traffic jams." (Respondent Lock 7)
	"The advantage of living here is convenient transportation. Many people commute for more than one hour, so access to MRT can save time. But the downside is heavy traffic jams caused by container trucks." (Respondent Flat 19)
Transportation means	"I am too old to find food (job) so I have to wake up at 4 am to catch two tiao to my workplace. Sometimes I miss the two tiao cars, and it takes a lot of times to transport back home." (Respondent 70 Rai 29)
	"I work in Nong Chok by taking two tiao cars early morning. If the new place is outside of the city, I will have problems with transportation. So, if in the city center, no matter where I can reach there." (Respondent 70 Rai 2)

4.4 Descriptive statistic

Table 13 illustrates that the median age is 35. 54.4% are male, and 45.6% are female. Single accounting for 48.9% and 31.1% of respondents attain a university or higher vocational degree. The median of household members is four persons. 53.3% of respondents have no child, while 63.3% have no elderly living in the household. 57.8% of households' monthly income gains 5000-20,000 baht, and 71.1% of respondents work within 3 km.

The median job location in the distance is 1.2 km. Further, the average job location in the distance of Lock is 1.78 km, 70 Rai 3.93 km, and Flat 2.64 km. The median duration of living is 20 years, while the median of relatives and close friends living in the community is three persons equally. Regardless of type of tenure, 45.6% are sub-renter. Moreover, 53.4% of respondents work in the retail and services sector. Table 14 presents the percentage of socioeconomic characteristics of respondents by three communities and the total percentage of respondents.

Table 13 Median of variables

Median of variables Variables	
Age	35
Household member	4
Children in household	0
Elderly in household	0
Job location in distance	1.2
Duration of living	20
Relatives in community	3
Close friends in community	3

Table 14 Socioeconomic characteristics of respondents

Individual and household characteristics

Characteristics	Respondent	Community			Total (%)
		Lock (%)	70rai (%)	Flat (%)	
Age	17-25 years old	23.3	20	33.3	25.5
	26-35 years old	33.3	20	20	24.4
	36-45 years old	23.3	30	23.3	25.5
	46-55 years old	6.7	16.7	13.3	12.2
	56-65 years old	13.3	13.3	10	12.2
Gender	Male	53.3	53.3	56.7	54.4
	Female	46.7	46.7	43.3	45.6
Marital	Single	56.7	40	50	48.9
	Married	36.7	43.3	46.7	42.2
	Divorced	3.3	10	3.3	5.5
	In separation	3.3	3.3	0	2.2
	Widows	0	3.3	0	1.1
Education attainment	Primary school and under	10	23.3	3.3	12.2
	High school	33.3	30	16.7	26.7
	Senior school or vocational degree	30	30	30	30
	University or higher vocational degree	26.7	16.7	50	31.1
Household member	1 person	6.7	3.3	6.7	5.6
	2-4 persons	50	53.3	66.7	56.7
	5-7 persons	40	33.3	26.7	33.3
	8-10 persons	3.3	10	0	4.4
Children in household	No child	33.3	63.3	63.3	53.3
	1-2 children	50	30	36.7	38.9
	More than 2 children	16.7	6.7	0	7.8
Elderly in household	No elderly	70	63.3	56.7	63.3
	1 elderly	23.3	20	23.3	22.2
	2 and more than 2 elderlies	6.7	16.7	20	14.5
Household monthly income	5000-20,000 baht	60	66.7	46.7	57.8
	20,000-50,000 baht	26.7	16.7	43.3	28.9
	50,000-100,000 baht	6.7	13.3	6.7	8.9
	More than 100,000 baht	6.7	3.3	3.3	4.4
Duration of living	0.1-10 years	20	33.3	43.3	32.2
	11-20 years	26.7	16.7	30	24.5
	21-30 years	23.3	16.7	20	20
	31-40 years	13.3	23.3	3.3	13.3
	More than 41 years	16.7	10	3.3	10
Relatives in community	Yes	76.7	63.3	60	66.7
	No	23.3	36.7	40	33.3
Close friends in community	Yes	76.7	73.3	70	73.3
	No	23.3	26.7	30	26.7
Type of tenure	Resident with contract with landowner	3.3	10	23.3	12.2
	Sub-renter	33.3	56.7	46.7	45.6
	Resident without contract with landowner	10	13.3	6.7	10
	Others	53.3	20	23.3	32.2

Occupational attributes (continued)

Characteristics	Respondent	Community			Total (%)
		Lock (%)	70rai (%)	Flat (%)	
Type of job	Retail and service	56.7	56.7	46.7	53.4
	Logistic and transportation	6.7	16.7	13.3	12.2
	Private office	13.3	16.7	26.7	18.9
	Professional	13.3	10	13.3	12.2
	Business	10	0	0	3.3
Job location in distance	1-3 km	80	63.3	70	71.1
	3-6 km	16.7	20	26.7	21.1
	More than 6 km	3.3	16.7	3.3	7.8

Chapter 5 Results

This chapter draws on the statistical results from spatial autocorrection, the chi-square test, and cluster analysis, which consist of hierarchical and K-mean cluster analyses. Finally, the output of the five clusters further represents the identity and attributes of residents with different degrees of relocation willingness.

5.1 Results of data analysis

5.1.1 Spatial autocorrelation

The spatial autocorrelation tool results suggest that the job location pattern at each feature location is spatial independent. In other words, observations are independent of one another, meaning there is no relationship between residents' job locations. Furthermore, Figure 15 demonstrates that Moran's Index is 0.085, close to zero, implying that the residents' job locations are spatially independent. Moreover, the pseudo p-value is 0.001 indicating statistical significance.

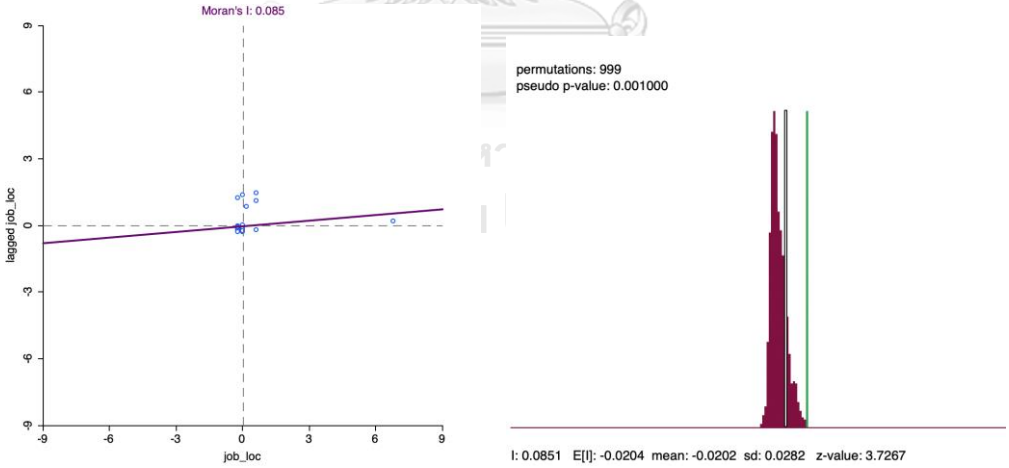

Figure 15 Moran's I test and permutation on residents' job location

5.1.2 Chi square test

Table 15 represents the value of the variable job location in the distance is 16.347, more significant than the critical value of 12.592, so as reject the null hypothesis. Additionally, asymptotic significance (2-sided) reveals the figure 0.012, smaller than the p-value 0.05, indicating job location in the distance has a statistically significant relationship with the dependent variable, the willingness to relocate at the 95% confidence interval. Moreover, the significance at the 90% confidence interval reveals that variables of elderly in the household, type of job, and monthly household income are statistically significant with the willingness to relocate.

Table 15 Test of relationship between variables and willingness of relocation

Test of relationship between variables and willingness to relocate

Variables	Pearson Chi-Square		
	Value	df	Asymptotic significance (2-sided)
Age	13.063	12	0.364
Gender	3.437	3	0.329
Marital	8.751	12	0.724
Household member	2.196	9	0.988
Children in household	2.753	6	0.839
Elderly in household	11.127	6	0.085*
Education attainment	8.968	9	0.440
Type of job	18.688	12	0.096*
Monthly household income	15.933	9	0.068*
Job location in distance	16.347	6	0.012**
Type of tenure	4.117	9	0.904
Duration of living	16.756	12	0.159
Relatives in community	1.163	3	0.762
Close friends in community	0.922	3	0.820

Note. * significant at the 90% confidence interval.

** significant at the 95% confidence interval.

5.1.3 Cluster analysis

Hierarchical cluster analysis

First, the hierarchical cluster analysis has chosen Ward's Method to minimize the sum of squares errors, and Euclidean works in lower dimensions to determine how many branches. The hierarchical cluster results have been divided into five clusters for a holistic understanding and a better distribution of clusters to describe the phenomenon of different groups. Figure 16 illustrates the dendrogram generated by the hierarchical K-means clustering process defined into five branches.

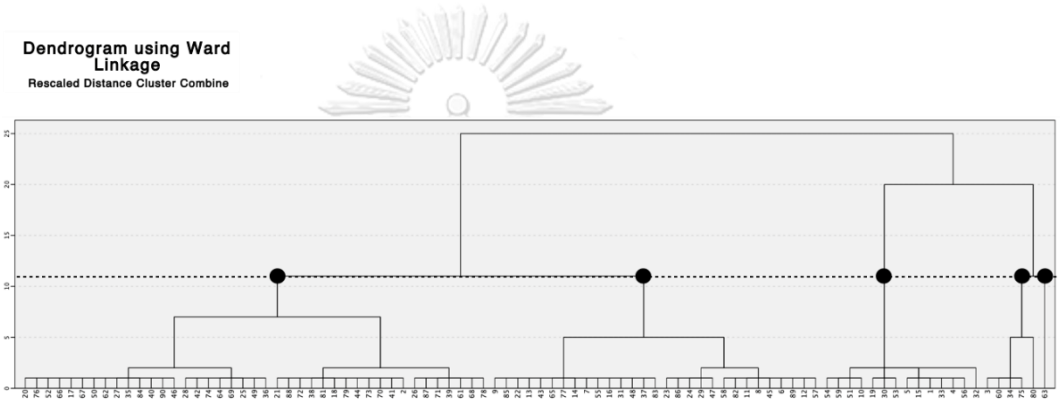

Figure 16 The dendrogram of clustering results

K-means cluster analysis

Table 16 descript the characteristic of residents. Four out of five live in 70 Rai, while one out of five is from Flat. Despite cluster one, single males are likely willing to relocate, while the other four clusters show an improbable and very improbable willingness to relocate. The household members are between three to five persons, four out of five including one child, while the elderly appear in two clusters that show different perceptions of willingness to relocate. Regarding education attainment, two out of five graduated from senior school or vocational degree and high school, respectively, while one out of five attained a university or higher vocational degree. Moreover, it is worth noting that four of the five clusters work in the logistics and transportation sector, earning a monthly household income between 20,000-50,000 Baht, and the type of tenure has no contract with the landowner. However, the duration of living varies in each cluster, and the

number of relatives and close friends living in the community indicates a more outstanding range between clusters.

Hence, according to the results of algorism from the K-means cluster, five clusters have been defined. Cluster one describes the possible relocation, and clusters two to five exhibit an improbable and very improbable willingness to relocate. Namely, Cluster 1: Gen Z single male, Cluster 2: Sub-renter work within 3km, Cluster 3: Rooted married female, Cluster 4: Educated male work within the community, Cluster 5: Second generation work in retail and services sector. Furthermore, in comparison of each cluster, a significant similarity between Gen Z single male and Sub-renter work within 3 km both represented the majority of cluster members that showing community, gender, children in the household, educational attainment, monthly household income, and job location in the distance are highly consistent. However, age, marital status, and willingness to relocate indicate a significant disparity.

Regarding rooted married females, the monthly household income is the lowest between 5000-20,000 Baht, but the distant job location is 4.69 km. Moreover, the significant extended period of 46.1 years also depicts the attribute of rooted married females who have lived in the community for the most extended years compared to other clusters. Lastly, educated males working within the community and second-generation work in the retail and services sector represented the minority of cluster members who have similar characteristics on monthly household income, type of tenue, the closest job location within 1 km, a significant number of close friends and relatives in the community, and the degree of very improbable willingness to relocate. Furthermore, the different ages, marital status, household component, type of job, and contractive educational attainment distinguish the substantial differences between these two clusters.

By summarizing the characteristics of the five clusters, it is instinctive to discover the difference between one and another. For example, Cluster 1- Gen Z single male is young and single in a 5-household member family, showing a possible willingness to relocate. In contrast, Cluster 2 Sub-renter work within 3km is married males living in a 3-household member family for 20 years, showing an improbable willingness to relocate. Both represent the majority of residents in the Klong Toei community. On the other hand, Cluster 3 Rooted married females and Cluster 4 Educated males work within the community represent the same 5-

household member family. However, different components of living with two elderlies likely lead to the more vital improbable willingness to relocate. Finally, Cluster 5 Second-generation work in the retail and services sector indicates that a unique case of second-generation residents prefers to stay in the community where they were born, raised, and work within the community.

Table 16 K-Means clustering algorithm results (K = 5 clusters)

Name of cluster	**Gen Z single male**	**Sub-renter work within 3 km**	**Rooted married female**	**Educated male work within the community**	**Second generation work in retail and services sector**
	Cluster 1 (N = 41)	Cluster 2 (N = 31)	Cluster 3 (N = 13)	Cluster 4 (N = 4)	Cluster 5 (N = 1)
Community	70 Rai	70 Rai	70 Rai	70 Rai	Flat
Gender	Male	Male	Female	Male	Female
Age	26	44	50	43	22
Marital status	Single	Married	Married	Married	Single
Household member	5	3	5	5	4
Children in household	1	1	1	1	0
Elderly in household	1	0	0	2	0
Education attainment	Senior school or vocational degree	Senior school or vocational degree	High school	University or higher vocational degree	High school
Type of job	Logistics and transportation	Logistics and transportation	Logistics and transportation	Logistics and transportation	Retail and services
Monthly Household income	20,000-50,000	20,000-50,000	5000-20,000	20,000-50,000	20,000-50,000
Job location in distance (km)	2.45	2.24	4.69	0.66	0.19
Type of tenure	No contract	Sub-renter	No contract	No contract	No contract
Duration of living	11.7	22.9	46.1	31	20
Relatives in the community	6	4	10	7	100
Close friends in the community	5	6	6	63	50
Willingness to relocate	Probable	Improbable	Improbable	Very improbable	Very improbable

In addition, Figure 17 demonstrates the scatter plot of duration of living by age by cluster number of cases. Despite the single case cluster 5 being born and raised in the community, it generally displays the distribution of scatter plots on the relationship between age and duration of living by five clusters, which intuitively represent the older generation and longer duration of living, delivering an improbable willingness to relocate.

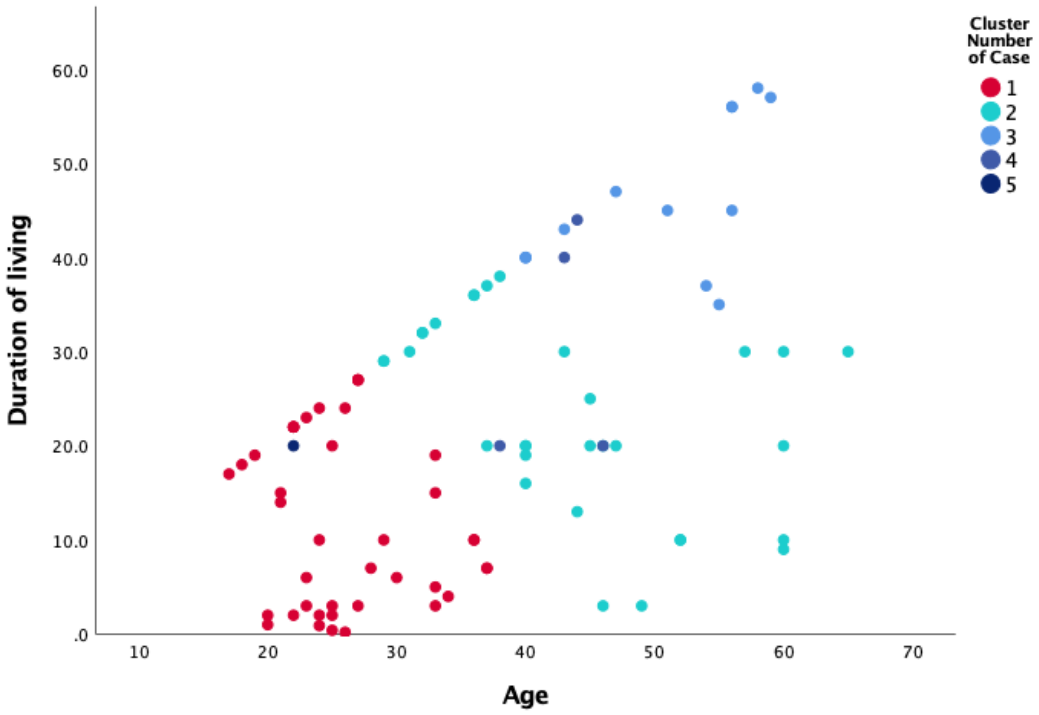

Figure 17 The scatter plot of duration of living by age by cluster number of case

Chapter 6 Discussions and Conclusion

This chapter includes a summary of findings, a discussion, and a conclusion. Lastly, the study's limitations and recommendations for future research are addressed.

6.1 Summary findings

Since the government and PAT launched the smart community projects on the land owned by PAT, some controversial matters have been underlined in the informal settlement of the Klong Toei community in Thai society. From the 90s, the survey for housing and informal settlements conducted by NHA, occupational concern and insufficient income are the most pressing problems for informal settlement residents. Till today, the Klong Toei community is the most noteworthy informal settlement in Bangkok, and many dwellers convey that this resettlement plan leads to catastrophic circumstances, as many express that they may lose their livelihood and persist in staying in the community due to the proximity to their job location. Hence, this study investigates the relationship between residents' job location and test factors affecting residents' willingness to move. Furthermore, what kind of characteristics of residents led to the probable willingness to relocate, and what type of jobs possess a higher probability of relocating?

Firstly, the results indicate that residents' job locations are spatially independent, in which there is no relationship between job locations in the context of spatial autocorrelation. Meanwhile, the result of testing in three categories, individual characteristics, household characteristics, and occupational attributes, a total of 14 independent variables, indicate a legible answer: job location has a statistically significant relationship with residents' willingness to relocate. Moreover, the Pearson chi-square test, significant at a 90% confidence interval, reveals that the elderly in the household, type of job, and monthly household income are statistically significant corresponding to the willingness to relocate.

Secondly, the qualitative interviewees' quotes suggest that generation disparity is a critical factor in directing the willingness to relocate, mainly when the age of 17 to 25 in Flat and between 26-35 in Lock are more likely to relocate. Moreover, job locations have also been a vital factor when considering moving

that residents quoted convey a probable willingness to relocate. According to the context analysis findings, the type of job within 1km of the community, many residents work in the retail and services sector, indicating an improbable willingness to relocate; in turn, the private office sector has a higher willingness to relocate, both appearing in 70 Rai. Furthermore, transportation is another critical factor that residents emphasize the importance of being close to the transportation network, providing convenient access to their job locations. Some residents express the drawbacks of living in the Klong Toei community, often encountering traffic jams. However, all residents relying on transportation services predominantly show an improbable willingness to relocate.

Lastly, cluster analysis explains the phenomenon by identifying the characteristics of distinct groups, which interprets the type of job that residents in 70 Rai working in the logistics and transportation sector play a considerable portion that appears in the different degrees of willingness to relocate. Although working in the logistics and transportation sector and related to PAT accounting for 22.2% of total samples (20 out of 90) in three communities, it reveals a contrasting perception of willingness to relocate. Notably, a significant difference in clusters of improbable to relocate is that females working in the logistics and transportation sector and living for an extended period gain a lower monthly household income than males. Moreover, their job location in the distance is far away compared to other clusters. Further, the type of tenure as no contract with the landowner also shows a significant portion in the cluster analysis results. Hence, further discussion should be considered for a holistic understanding of the attributes of residents who work in the logistics and transportation sector and the job related to PAT.

6.2 Discussions

From the k-means cluster analysis results, it is noteworthy to comprehend further the traits and characteristics of resident workers in the logistics and transportation sector. Hence, of 20 samplings, 12 are categorized in the logistics and transportation sector, while four respondents work for hire for PAT, two are professional, and two are in private office sectors who work related to PAT.

Characteristic in logistics and transportation and job related to PAT

Figure 18 indicates the individual characteristics that the age group between 17-25 years old has more willingness to relocate, while half of those aged 56-65 years old show the same proportion compared to the age group between 26-35 years old and 46-55 years old have less willingness to relocate. However, logistics and transportation and jobs related to PAT are job domains by males mainly, so one female sampling may not present a gender difference regard to willingness to relocate. Similarly, the marital status as single and married also shows a nearly equal proportion. However, educational attainment indicates a considerable difference which can conclude that the lower education, the higher willingness to relocate.

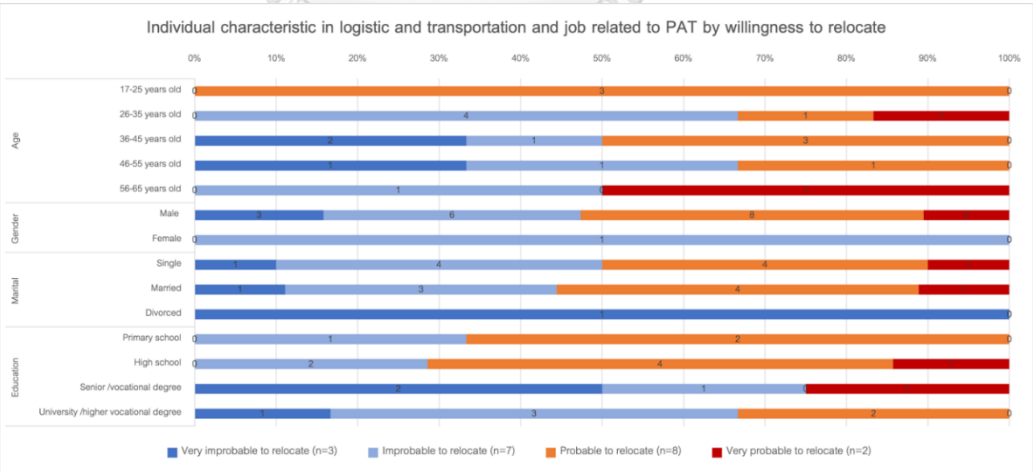

Figure 18 Individual characteristics in logistics and transportation and job related to PAT by willingness to relocate (N=20)

Figure 19 depicts that a household member between 8-10 persons is more likely to move, and a household with children is slightly more likely to move. In contrast, households having elderly deliver a significantly improbable relocation. Regarding monthly household income, the range between 5000-20,000 baht has a slightly probable willingness to move, but income does not suggest the difference in whether to relocate. As one crucial indicator, duration of living tells an impressive phenomenon: residents who live less than ten years and 21-30 years are probable to move compared to 11-20 years and 31-40 years. However, relatives and close friends in the community do not reveal a distinct position corresponding to a willingness to relocate. On the other hand, the type of tenure a sub-renter has more willingness to move compared to others, such as house owner or benefit house offered by the company toward a low willingness to move.

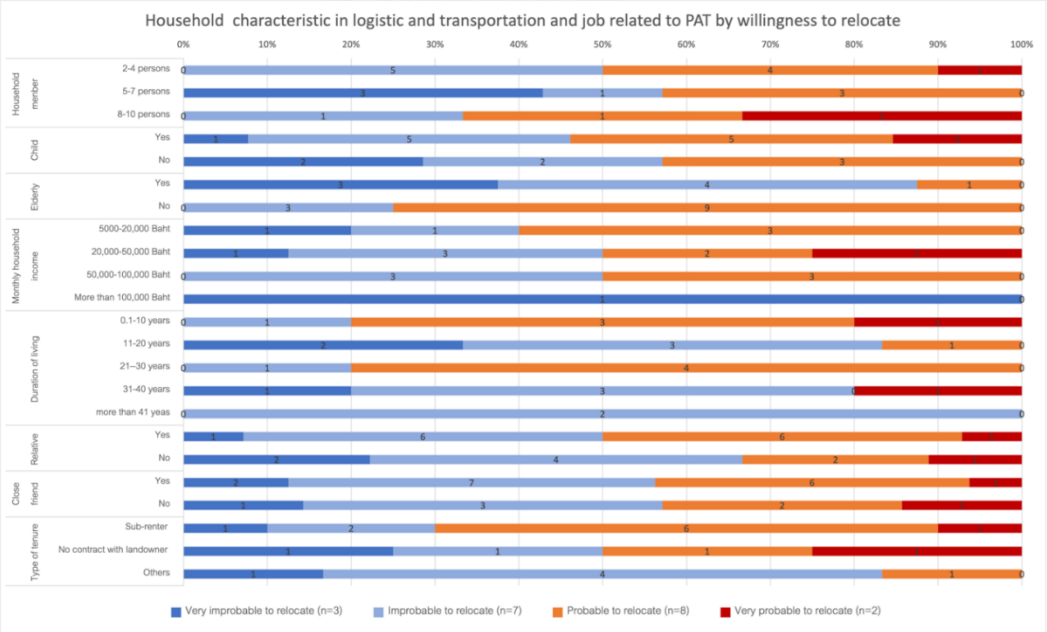

Figure 19 Household characteristics in logistics and transportation and job related to PAT by willingness to relocate (N=20)

Figure 20, regarding the occupational attribute as core in this study, illustrates a compelling result that residents' job location between 3-6km has a higher probability of moving than job location less than 3 km. Nevertheless, those in the logistics and transportation sectors are most likely to move, which implies that their job attributes are mobile, and the relocation plan may not affect their livelihood. In turn, residents

working in the retail and services sector work for hire for PAT, which indicates a profoundly improbable to relocate. Moreover, working in the private office and professional sectors has a neutral proportion of the willingness to relocate.

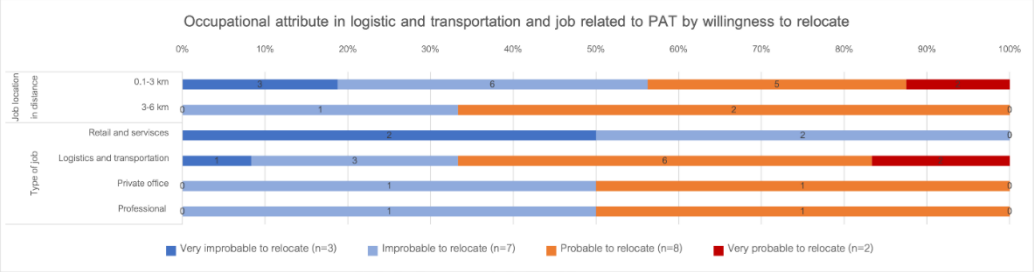

Figure 20 Occupational attribute in logistics and transportation and job related to PAT by willingness to relocate (N=20)

To sum up, investigating the residents' characteristics in logistics and transportation, and jobs related to PAT (N = 20), consistent with content analysis findings, indicate that the age between 17-25 is most willing to relocate. On the contrary, household living with the elderly delivers an influential improbable to relocate, which aligns with the statistical test indicating that residents living with the elderly in the household have a statistically significant relationship with willingness to relocate. Moreover, the results depict education attainment in a discrepancy status that the lower education, the higher willingness to move. In addition, the type of tenure as a sub-renter and job location between 3-6km has more willingness to move.

6.3 Conclusion

The informal settlement is often doomed to symbolize the degree of social and economic development to some extent. A further investigation of informal dwellers' relocation decisions provides a comprehensive understanding of Bangkok's informal settlement dynamics. Regarding the literature review worldwide on informal settlements relocation, for dwellers with relatively disadvantaged socioeconomic status in developed countries, job accessibility, commute costs, and transportation often determine and considered by the disadvantaged group. On the other hand, social ties play a significant role in the primary concerns for dwellers who remain in their current living environment in developing countries. Life cycles are another vital factor that implies the household component often directs the relocation decision. However, the Klong Toei informal settlement is likely less reliant on social ties in Bangkok's modern society than in early studies.

This research demonstrates residents' job locations and studies the factors influencing residents' willingness to relocate through surveys and face-to-face interviews. The results in response to the research question are in line with the hypothesis that job location has a statistically significant relationship corresponding to residents' willingness to relocate. Regarding the determinants of residents' characteristics toward relocation decisions, there is a consistency related to the theory proposed by Wolpert (1965), which emphasizes that age is an essential variable in studying the individual factors of relocation. Moreover, the content analysis finding supports the theory that generation disparity is momentous in relocation decisions. In other words, the younger generation, the higher probability of relocating.

Regarding job location, most residents are likely willing to relocate when quoting the importance of job location. On the other hand, the type of job within 1 km of the community, in 70 Rai, residents who work in the retail and services sector possess a lower willingness to relocate, which in turn, work in the private sector shows a higher willingness to relocate. In addition, residents rely on the convenience of being close to the transportation network, revealing a significant improbable willingness to relocate.

Furthermore, the cluster analysis technique interprets the type of job that residents who work in logistics and transportation have a contradictive status corresponding to the willingness to relocate.

Comprehending residents' attributes from the cluster analysis, the outcome of five clusters provides insight into comparing different residents' perceptions regarding the willingness to relocate, which describes the phenomenon of residents' characteristics. Gen Z single males represent the majority of residents showing a probable willingness to relocate. On the other hand, Sub-renter work within 3 km represents the majority of residents delivering an improbable willingness to relocate. Likewise, rooted married females, educated males working within the community, and second-generation workers in the retail and services sector are the minority of residents who should be considered when implementing those groups' resettlement.

This study examines the relationship between job location and the characteristics of residents in three sub-communities in the Khlong Toei community to understand residents' perceptions of a willingness to relocate. Again, job location has a significant relationship with the willingness to relocate. In other words, consideration should be addressed to residents' job locations to stimulate the motivation of relocation. Ultimately, based on the holistic comprehension of residents' characteristics in the Klong Toei community, this study aims to shed light on a symbolic sense of the notion of an informal settlement and the residents' attributes in the urban city of Bangkok's booming economic development. Meanwhile, it provides a basis to re-evaluate the urban redevelopment policy and compensation schemes for future study.

6.4 Limitations of the study

Although the Khlong Toei community's population density covers diverse characteristics, the three communities show different features and atmospheres. For example, residents in Lock are easy-going during the survey interaction. On the other hand, residents in 70 Rai have the most hardship finding due to the geographic location between two traffic spots on the main commercial street. Similarly, residents in Flat have better living conditions and likely a higher socioeconomic status leading to a less cooperative attitude toward the survey.

As a result, limitations occur when conducting the survey by face-to-face interview for two reasons. Firstly, the high rejection rate from residents may include only some type of job, for example, constructors, well dressed up, or having fancy transport means residents and so forth do not cooperate in this study. Secondly, this survey research employs a clustering sampling method which randomly selects samplings to reduce the bias in a good way. However, some older residents are inevitably less cooperative when surveying the perception of willingness to relocate, and asking about job location may give some degree of sensitivity for some residents. Therefore, increasing the on-site visiting frequencies may be beneficial, which creates trust between the residents and the researcher. Also, a suggestion is acquiring more sampling size by combining different data collection methods for holistic investigation.

6.5 Recommendations for future research

Since the Thai government initiated to tickle informal urban settlements issues in the 80s, National Housing Authority (NHA) was established to support disadvantaged groups by building affordable housing and intervening to secure tenure and provide the infrastructure through coordination between landlords and informal settlements. The relocation of 70 Rai of the Klong Toei community in the 90s is intervened under the land-sharing schemes, which land leasing is about to expire. Moreover, NHA-planned affordable housing in remote locations inevitably leads to unwelcome failures when residents cannot access job opportunities or meet basic facility needs.

On the other hand, the government institution Urban Community Development Office (UCDO) oversees providing loans with lower interest for building and upgrading housing for disadvantaged groups. After the transformation into the Community Organization Development Institute (CODI), the Bann Mankong project has been implemented nationwide. It is recognized as successful progress sufficiently to tickle the problems of informal settlement and provide the urban disadvantaged groups with access to housing security via subsidies and offer housing loans direct to the community management (Boonyabancha, 2005a). However, the financial subsidy technique may only work in some informal settlements because the landowners, mainly settlements occupying governmental land, have further goals to develop their own land after the expiration of land-sharing agreements.

From another standpoint, the compensation scheme often faces controversial situations, such as providing houses, land, or cash. It seems challenging to meet the consensus between landlord and residents due to consideration of the size of the housing unit, proximity to the city, or fixed amount of money is likely not fit all various socioeconomic residents. According to Viratkapan and Perera (2006), the amount of compensation is a significant factor leading to a successful informal settlement relocation. Regardless, compensation schemes provided by PAT are likely not applicable in the modern Klong Toei community.

Hence, this study examines the relationship between residents' relocation decisions and highlights that determinants of residents' job location reflect the willingness to relocate. The distribution of

job location maps indicates residents' workplaces and proves that job location plays a significant role in residents' decision-making. Furthermore, recommendations for future study can be addressed in aspects; firstly, explore the various types of jobs in the detailed clarification industries that contribute to understanding informal dwellers' characteristics comprehensively. Secondly, slum resettlement is a broad subject during the urban development process. Nevertheless, this study does not apply to evaluating compensation forms, leaving room for studying the failure of compensation schemes and how to formulate a particle resettlement strategy. Finally, the governmental agencies and institutions direct the successfulness of relocation plans that says redevelopment policy reviews can benefit the informal resettlement a helpful perspective when counting on governmental intervention.

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