

**URBAN FORM THROUGH ADAPTATION OF INFORMAL
SPATIAL DYNAMICS**

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PhD in Architecture

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**URBAN FORM THROUGH ADAPTATION OF INFORMAL
SPATIAL DYNAMICS**

By

Emmanuel John Liombo

**A Thesis Submitted in Partial Fulfilment of the Requirements for the Degree of
Doctor of Philosophy in Architecture of Ardhi University**

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CERTIFICATION

The undersigned certify that they have read and hereby recommend for acceptance by Ardhi University a thesis entitled *Urban form through adaptation of informal spatial dynamics: The Case of Kilungule “A” and Mamboleo “B” settlements in Dar es Salaam, Tanzania* in fulfilment of the requirements for the degree of Doctor of Philosophy (Architecture) of Ardhi University.

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Date:.....

DECLARATION AND COPYRIGHT

I, **Emmanuel John Liombo**, declare that this thesis is my original work and that it has not been presented and will not be presented to any other university for a similar or any other degree award.

Signature:

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DEDICATION

In memory of my late father, Mr. Elia John Liombo

ABSTRACT

This study analyses the informal processes of production of dwelling spaces to capture inherent dynamics governing the rationality of the process, the way the government adapt the informal spatial dynamics, and the essence and the impacts of adaptation attempts on resulting urban forms by drawing on a case study of Kilungule "A" and Mamboleo "B" informal urban residential neighbourhoods in the rapidly urbanizing city of Dar es Salaam. The interest in this study stems from modern global policies for inclusive and sustainable cities, that are pushing governments to adapt some traditions of informal space production without compromising the resilience of the resulting urban spaces - a situation that continues to challenge the formal traditions of space production. Further, though some studies on informality have taken place and produced valuable insights, they have rarely discussed the aspect of informal spatial dynamics, their adaptation and the impacts on urban forms, which is the focus of this study.

The research methodology involved a mixed method where the data collection tools included questionnaires, interviews, document analysis, map-reading and physical observations. Cultural- Historical Activity Theory (CHAT) was used to organize the information collected, illuminate the contradictions in the activity systems and guide analysis of the activities to gain their significance in the production of urban dwelling spaces. The Systems Evaluation Theory was involved in evaluating the informal spatial dynamics adaptation systems to determine their efficiency, effectiveness and impacts on urban forms. Snowball and purposive sampling techniques were involved in selecting the respondents, with the first being used to determine the individual dwelling owners and the private sector practitioners while the latter choosing the public sector urban planning officials.

The study established that the dynamic structures are crucial to the survival of the informal dwellers as they were observed to provide a fertile ground for the survival of the informal processes of production of space together with their associated spaces. The flexibility and adaptability of resulting spaces and dwellings were observed to support the socio-economic realities of most urban dwellers. The ability of spaces to adapt quickly to changing situations makes their urban forms resilient. The study concludes that the understanding of the dynamics and rules governing spatial changes in informal urban spaces is critical to achieving complex urban spaces and successful spatial interventions in informal urban areas.

Keywords: Adaptation, Informal spatial dynamics, Socio – economic resilience, Urban form

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ACRONYMS

ARU	Ardhi University
BRT	Bus Rapid Transit
BOQ	Bills of Quantities
CAQDAS	Computer-Assisted Qualitative Data Analysis Software
CBD	Central Business District
CBO	Community-Based Organization
CHAT	Cultural-Historic Activity Theory
CLT	Community Land Trusts
CRO	Certificate of Right of Occupancy
CIUP	Community Infrastructure Upgrading Program
COWI	Christen Ostenfeld and Wriberg Jønson
DAWASCO	Dar es Salaam Water Supply Company Limited
DMDP	Dar es Salaam Metropolitan Development Project
GoT	Government of Tanzania
GLTN	Global Land Tool Network
ICT	Information and Communication Technologies
IDA	International Development Association
IDRC	The International Development Research Centre
KICHAKIDA	<i>Kikundi Cha Kijamii Kilungule Darajani</i> (in English ‘Kilungule - darajani Social group)
KLPT	<i>Kanisa La Pentekoste Tanzania</i> (in English ‘Pentecostal church of Tanzania)
LGA	Local Government Authority
MEO	<i>Mtaa</i> ¹ Executive Officers
MLHSD	Ministry of Lands, Housing, and Human Settlements Development
MICO	Muzdalifah Islamic Charitable Organization
NTD	Neglected Tropical Diseases
NGO	Non-Governmental Organization
NUSP	National Upgrading Support Programme
OSCE	The Organisation for Security and Cooperation in Europe

¹ This is a Swahili word for ‘street’

PC	Personal Computer
PRIMED ²	Programa Integral de Mejoramiento de Barrios Subnormales en Medellín
PO-RALG	President Office Regional Administration and Local Government
PMO-RALG	Prime Minister’s Office – Regional Administration and Local Government
PPA 2011	Public Procurement Act of the year 2011
RL	Residential License
RPF	Resettlement Policy Framework
SDGs	Sustainable Development Goals
SET	Systems Evaluation Theory
SUDP	Strategic Urban Development Plans
TZS	Tanzanian Shillings
TANESCO	Tanzania Electricity Supplying Company Limited
TANROADS	Tanzania National Roads Agency
TARURA	Tanzania Rural and Urban Roads Agency
TAYMA	Tanzania Youth Muslim Association
TAZARA	Tanzania and Zambia Railway Authority
UCLAS	University College of Lands and Architectural Studies
URT	United Republic of Tanzania
VICOBA	Village Community Banks
UCLAS	University College of Lands and Architectural Studies
USD	United States Dollar
UNECE	The United Nations Economic Commission for Europe
UN-Habitat	United Nations Habitat
WEO	Ward Executive Officers

² PRIMED - a Latin abbreviation which translates “Integrated Slum Upgrading Program of Medellín” (Betancur, 2015)

PART ONE

BACKGROUND AND FRAME OF THE RESEARCH

This section contains three chapters that bring the research into context. It presents the background to the research and explains the theoretical and methodological principles on which the research is based. Three chapters provide an important platform for the later parts of the report in which the empirical findings and conclusions are founded.

CHAPTER ONE

1 INTRODUCTION

1.1 Preamble

This chapter gives a summary of the primary emphasis of the study. It introduces the conceptualization of the studied issue and sets forth the research problem. It sets the context, issues, purpose and conceptual basis of the study. It highlights the global and Tanzanian realities of coexistence of formal and informal urban systems and shows that informal spatial dynamics play an important role in shaping contemporary urban forms. It addresses the problem of limited understanding of informal norms and practices in formal planning systems, presents research objectives and questions guiding the research, and explains the relevance of the study for academics, practitioners and policy makers. The objectives, proposal, and questions provide additional details to guide the study's progress. The chapter further, provides definitions of the key terms necessary for the interpretation of the research and eventually provides a summary of how the thesis is structured and what each section primarily discusses.

1.2 Background

The city's development history shows that it has evolved naturally through the adaptation of different social, geographic, economic, cultural, and other factors. However, during the same progression, the city has transformed into a physical entity influenced by human interventions to shape the urban layout according to human spatial needs. City planning and design draw significant influence from the pre-industrial city, and further advancements are made in response to the flaws of the industrial city. Currently, the city is viewed through the lens of intentional design and planning, resulting in an organised urban layout that addresses both the city's functionality and environmental issues. In the developing world, specifically in Africa, rapid urbanisation has caused the expansion of unregulated cities, resulting in the prevalence of informal settlements as a major concern. Informal elements are becoming more integrated into the structured urban landscape (Chen, H. 2021; Kamalipour & Peimani, 2019; Viana, 2018). Globally, informal cities are viewed as a serious problem, and it is thought that turning them into formal cities is the best way to solve the problem (Alfaro d'Alençon et al., 2018; Izar & Jean-Baptiste, 2019; Kolowa et al., 2024). However, during this transition, the primary challenge is that the "formal" and "informal" cities are two distinct entities with different origins and characteristics. The creation of a 'formal' city is to a greater extent characterised by rigidity,

rules, and authority, while the 'informal' city is known for its flexibility, cultural norms, and community values. However, neither formality nor informality is adequate (Chen, H 2021). Formality is more structured and easier to follow, but less versatile, while informality is more adaptable yet also more prone to corruption (Ahmed, 2020). The formal city's planning and development create opportunities for informal actions of insertion, accretion, and extension (Bensouda et al., 2024; Dovey, 2012; Rivki et al., 2024). For example, in the Dutch organic city development sector, unconventional local players have taken bottom-up initiatives to meet needs that the state or market has not addressed, such as providing creative workspace and exploring circular-economy practices (Mens et al., 2023). Mushumbusi (2011) presents the two extreme cases in Figure 1:1 with their disadvantages if there are no complementary practices. *In the one extreme case where there is total formality, the system may tend to be rigid and counterproductive. On the other extreme case, where there is total informality, the system may tend to be chaotic and ineffective as well.* The two extreme cases are illustrative of inherent shortfalls within each system. Although urban informality may go unnoticed within the formal city and appear unimportant, it is closely tied to the politics of urban place identity and global place branding (Dovey, 2013). It is through such contradiction, an 'informal' city may not be viewed as the problem but as a platform through which opportunities for adaptation of informal spatial dynamics may be sought to complement the weaknesses of the extreme formal or informal systems of space production (Alberti et al., 2018; Cozzolino, 2020; Gatzweiler & Howden-Chapman, 2022; Mehaffy & Haas, 2018; Rauws, 2017). The inner zone of Figure 1:1 represents the practical interactive sphere where the formal and informal interaction is formed.

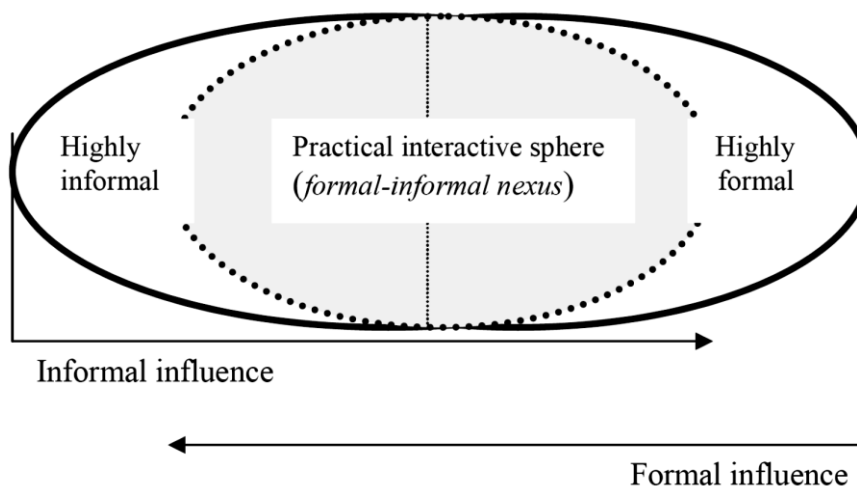


Figure 1:1. Formal-Informal continuum
Source: Mushumbusi, 2011; Kalugila, 2014

Majority of studies on informality and formality such as those by Kamalipour & Peimani, 2019; Viana, 2018; and Dovey 2013, have evolved in urban design and planning disciplines. Though the studies on informality and formality have produced valuable insights, they have inclined much on discussing the potentials of informality in producing complex urban environments and rarely touched on the aspect of adaptation of informal spatial dynamics in the processes of production and management of spaces. This particular study, therefore, delves into exploring the informality adaptation processes and their impacts on urban forms.

Nowadays, as cities grow in complexity, adaptation of informal spatial dynamics has become one of the significant urban challenges of our time. It is done to enhance the complexity and resilience of spaces together with their production and management processes, as cities are increasingly growing in complexity (Bensouda et al., 2024; Cozzolino, 2020; Haley et al., 2021; Jones, 2017; Rauws et al., 2020). The extent to which their urban areas and forms will be able to resist, adapt to or co-evolve under unpredictable circumstances and fulfil needs different from those they were originally designed for may be crucial for their very survival (Alberti et al., 2018; Gallotti et al., 2021; Rauws et al., 2020). Complexity, creativity, flexibility and adaptability are crucial components of resilience - an essential factor that promotes local strength, adaptability and reliable backup mechanisms. Complexity makes urban environments more resilient and robust, providing greater opportunities for social encounters, mixing, and adaptation through social learning (Boeing, 2018; Miguel & Güell, 2017). Informality catalyses complexity, creativity, flexibility and adaptability in the processes of production and management of spaces. Resilience enables cities to persist and even thrive in the face of global trends (Benham, 2012; Bensouda et al., 2024; Chen, H 2021; Haley et al., 2021; Jones, 2017; Liombo et al., 2024; Shukla, 2023).

The traditional forms of urban design practice that focused on top-down regulation and the production of fixed designs and master plans resulted in non-resilient urban forms that often fail to adapt easily to change (Dovey, 2019; Lehmann, 2020). Such forms of urban design and planning have proven both destructive and blind to uncertainties (Dovey, 2019). Modern global inclusive policies are pushing governments to adapt informality, though without compromising the resilience of resulting urban spaces. The inclusive policies, such as the "right to the city" policy, advocate for the equitable, just, and inclusive use of urban spaces for all inhabitants, present and future. Further, the discourses and practices in urban design and planning are

shifting from conventional systems to new systems that are more inclusive, adaptive and that can accommodate the informal processes of space production together with their dynamics and complexities within the Formal-informal continuum system (Cozzolino, 2020; Fitchett, 2014; Inam, 2019; Ahmed, 2020; Lutzoni, 2016; Mehaffy & Haas, 2018; Rauws, 2017). Continuum thinking is a new paradigm that shows how formal and informal systems exist together in spatial and social terms, as stated by Chen, H. (2021). Informal and formal urban elements come together to create intricate connections, inconsistencies, and opportunities crucial for constructing resilience in the resulting urban developments and areas (Rice, 2015). Although urban informality may go unnoticed within the formal city and appear unimportant, it is closely tied to the politics of urban place identity and global place branding (Dovey, 2013). The Sustainable Development Goal No. 11 (SDG11), among other things, proposes a worldwide overhaul to create inclusive, safe, and resilient cities and human settlements (Diab et al., 2020). The world reaffirms its dedication to ensuring that everyone has access to suitable housing. Informal housing is an important contributor to urban housing, particularly in quickly urbanising regions globally (Suhartini & Jones, 2023). In terms of city-building, experts concur that urban informality accounts for at least 60% to 80% of the existing urban fabric of developing countries (Carrizosa, 2022). Acknowledging its contribution, the “New Urban Agenda,” among other things, recommended that cities must reconsider and reassess their current urban planning methods that exclude informal activities to serve their needs better (United Nations-Habitat, 2022). Further, the global policy reforms are also increasingly emphasising the importance of adaptive planning, design and architecture. For example, the New Urban Agenda call for “a more open, malleable and incremental urbanism” that is emergent, ambiguous, and co-produced by the residents of the city. In that sense, the authors are pointing to the essential role of informality as a core process of urbanization (Mehaffy & Haas, 2018). Despite its problems, informality helps cities function and raises people’s well-being. Urban informality is the predominant mode of city-making today, particularly in African cities.

To successfully adapt informality in their systems of space and housing production has been a challenge to governments, as the formal and informal systems of production of space are incompatible, with formality being anchored on stasis and informality on flexibility (Cozzolino, 2020; Jones & Jones, 2019; Rauws, 2017). Spatial planners, urban designers and architects are now wrestling with how to embrace uncertainties in their daily practices (Rauws, 2017). Failure

to adapt to informality results from the engagement of simplistic interventions that ignore the complexity and dynamic nature of informality and its associated processes (Boeing, 2018). Rapoport (2016) provides an example of a formal intervention that disrupted a certain informal settlement in Mexico. Among others, according to Rapoport (2016), the failure led the original residents to their disrupted habitat and no longer supported their life struggles. Bolding further the importance of local norms, values and rules governing local processes, Rapoport (2016) asserts that:

“...In Mexico, travelling vendors at markets have an important function of passing essential information. When, in the interest of hygiene and prices, the market was replaced by permanent shops, the vendors no longer came and the social system was disrupted”
(Rapoport, 2016)

Modern-day scholars and practitioners in urban planning and design disciplines concur that successful adaptations and analysis of informal or formal-informal continuum systems can only be achieved by embracing informality (Boeing, 2018; Dovey, 2013; Marnane, 2021). Current practices and studies on urban planning, design and architecture are proposing some ways to embrace informality in the production and management of space successfully. Schmidt et al., 2016; Franck et.al, 2013 call for *Open-Ended Architecture*; Dohotariu, 2021; Oyama, 2021; Watt et al., 2023; Yiannoudes, 2016; and Govender & Shaikjee, 2024, advocate for *Adaptable Architecture*. Landscape architect Gouverneur (2015) proposed using the so-called *Informal Armatures* approach to planning, designing and managing informal spaces. Rauws (2017) suggests an *Adaptive Planning* approach that provides a broad framework for urban transformation without specifying a specific future spatial-functional layout. A new method of urban planning called the *Fractal Approach* was recently suggested by Personal & Archive (2019). Fitchett (2014) and Seeliger & Turok (2014) also proposed *Adaptive Governance* as a practical framework for enhancing resilience in urban areas. *Adaptive Governance* is a method of managing systems that involves policies being intentionally adaptable in response to their effects and flexible in reaction to changing situations. Fitchett (2014) also brought in the system of *Adaptive Co-Management*. Silva (2018) suggested that formal planning systems interact with informality and, from that interaction, learn how to improve planning rules while promoting an upgrade of informal interventions. The scholars also advocate for *Systems Thinking* as a suitable lens for analysing complex systems, such as the adaptation and the informal spatial dynamics,

to get a deep understanding (Boeing, 2018; Güleler, 2023; Porqueddu, 2022). However, in all such practices and approaches to studying complex systems, respect for local norms, values, and experiences has remained crucial. Dovey (2014) asserts that:

“Informal practices are rhizomic in contrast with the tree-like strictures of urban regulation and planning..... Any newly formalised codes that emerge need to sustain the productivity, amenity and sociality that are already embodied in the place, and acknowledge the dilemma that formalisation inevitably eradicates some of the scopes for informal adaptation” (Dovey, 2013)

The adaptation strategies that are taking place in the Latin American cities of Rio de Janeiro, Brazil, and Medellin, Colombia, respectively, are cited among examples of successful adaptation strategies. The strategies were demonstrated in two projects, namely the *Favela-Bairro* (The Slum to Neighbourhood Program) and PRIMED (Integral Program for the Informal Settlements Improvement of Medellin) (Ferrari et al., 2018; Betancur, 2015). These programs were implemented in 1994 and 1993, respectively, to eliminate the high degree of marginalisation, segregation, poverty, and violence which faced such cities (Kobayashi et al., 2009; Schwab, 2018). In these projects, efforts were geared towards holistic interventions that envisage “performative” relationships between the formal and informal processes (Rapoport, 2016). *Favela-Bairro*³ It is labelled a best practice by the World Bank and UN-Habitat in which municipal authorities suspended their usual top-down regulations to allow for the community to use their own special planning processes and building codes (Kobayashi et al., 2009). However, despite successful adaptation strategies, adaptation is not a question of “one size fits all”. The complexity of urbanism is highly context-dependent and contrasts considerably across cities and countries. Cities, therefore, need to find adaptation solutions that fit their respective contexts (Cobbinah, 2023). Rapoport (2016) insists further that individuals view issues and potential resolutions in varying manners. They have different interpretations of "fundamental necessities" and prioritise them differently; they have varying definitions of benchmarks (space, “slum” or comfort) and ideal settings.

In developing countries, informality is a common aspect of urbanisation and is being embraced

³ The Slum to Neighbourhood Program implemented in 1994 in Rio de Janeiro in Brazil (Miyamoto, J., & Buckman, S., 2022).

and adapted by the population. A majority (61.7%) of city dwellers in developing nations reside in informal settlements (Carrizosa, 2022; United Nations Habitat, 2022). Shukla (2023) asserts that informal areas in Africa are very flexible and strong, but they also have a significant vulnerability to flooding. Cities undergo constant change through political, economic, social, and spatial processes. (Huchzermeyer, 2011; Finn & Cobbinah, 2023; Kamete, 2013) were referenced in the text. In Uganda, Tanzania, and Senegal, residential areas contain a mix of economic activities and community services (Carrizosa, 2022). The level of space utilisation in established informal settlements shows that homes serve as more than just living spaces and that informal settlements are more than just places to live; they are key economic hubs for production (Carrizosa, 2022). Street vendors play a crucial role in ensuring food security, informal transport methods are essential for keeping the city functional, and home-based workers provide care services that support economic activity (Carbonnier & Panizza, 2018; Carrizosa, 2022).

Despite the contribution informality has in producing socio-economic resilient urban spaces, it has been viewed as a great challenge to these countries as they produce informal settlements which often threaten governments by posing challenges to urban planning, straining public services, creating potential for social and political instability and posing a challenge to governance due to their lack of formal recognition and control. Colonial governments and early independent governments used to ignore informality as a companion of formality in the production of spaces (Average, 2020). Since the 1960s, approaches to informality and informal settlements have been centred on eradication, eviction and top-down upgrading policies and programs (Myers, 2011; Arefi, 2018; Huchzermeyer *et.al*, 2006). Until now, the traditional planning system has failed to acknowledge informality, though the majority of reality is informal (Carrizosa, 2022). In African cities, urban planning and management often overlook informality, viewing it as disruptive to contemporary urban areas (Finn & Cobbinah, 2023). Positive perspectives on informality in policy development are relatively recent. Governments have recently started backing informality instead of opposing it (Carrizosa, 2022; UN-Habitat & Africa Planning Association, 2013). Nevertheless, existing methods are also considered inadequate. The New Town planning method used throughout the continent has not successfully tackled the social, ecological, and spatial issues of modern African urban environments, as demonstrated by Keeton (2020). City authorities in Accra, Muoroto, Harare, and Abuja frequently enforce harsh and brutal planning measures, such as forced evictions and demolition,

on informal spaces. Additionally, modern planning officials in African cities are struggling to formalise the "informal" African cities to align with their perception of what constitutes a "modern" city (Cobbinah, 2023). Nevertheless, formalisation involves converting informal information into a more structured and organised format (Carrizosa, 2022; Izar & Jean-Baptiste, 2019). In African cities, despite ongoing efforts by the governments, the persistence and growth of informal urban settlements show how informality can benefit the livelihoods of many urban residents.

In Tanzania, the adaptation of informal spatial dynamics is also taking place. Informality plays a more significant role in the production of spaces in urban areas. In larger cities like Dar es Salaam, 70% of its dwellers live in informal settlements (Limbumba, 2016). Policies opened the door to adaptation, as noted by Mosha (2005). The National Land Policy of 1995 allowed for changes by banning the destruction of informal settlements in urban areas that were present before the 1990s. The 1995 National Land Policy bans the destruction of informal settlements and promotes improving and offering essential community services, except for settlements located in dangerous zones. Informality has been present alongside and has grown into a significant partner to the formal traditions of space production in urban Tanzanian areas since 1995. Informality is becoming a more common way of creating urban spaces in both wealthy and impoverished areas, whether they are planned or spontaneous (Kiunsi & Mwageni, 2023). Casual methods of obtaining land are also present in the designated and mapped regions, particularly when official procedures are disregarded by government officials (Nuhu & Mpambije, 2017).

The Master planning approach was adopted after colonialism became challenged by informality. For example, the 2002 guidelines for building redevelopment in Kariakoo and Sinza, among areas of Dar es Salaam city, were violated with limited or no control from the concerned authorities (Lupala & Bhayo, 2014). In Sinza - one of the planned urban residential neighbourhoods in Dar es Salaam, residents were producing spaces informally, consequently informalizing the formally produced spaces (Vedasto & Mrema, 2013). In some sites and services program areas, dwellers adapt their settlement in response to new situations facing them, resulting in the encroachment of open spaces, unguided changes of building uses, and the emergence of new building uses such as churches, hotels, bars, kiosks, and shops, which conflict with regulations. Vedasto & Mrema (2013) noted that, once development in planned

settlements starts, not all of what was conceived during the planning process is realised as intended. In many cases, the dwellers of the National Housing Corporation (NHC) housing transform the houses to fit their changing purposes, such as the addition of rooms to accommodate new household members from villages and the appropriation of balconies for other purposes, such as storage.

Informality was observed in Kariakoo, the central business district of Dar es Salaam, alongside the formal practices of creating space. Lupala & Bhayo (2014) noted that the guidelines for building heights and coverage set out in the redevelopment projects were being rapidly flouted. Developers were observed building structures with greater numbers of storeys, increased plot coverage, and floor area ratios that exceeded the recommendations in the guidelines. One example is the 2002 redevelopment plan, which suggested the creation of four separate zones. In Zone I, buildings could only have up to two storeys; in Zone II, up to four storeys; in Zone III, between five and seven storeys; and in Zone IV, over eight storeys. A 30 % minimum and a 70 % maximum plot coverage were advised. Nevertheless, the regulations regarding the restriction on building height and footprint are currently being breached. Figure 1:2 depicts the ongoing progress in Kariakoo, with plots being approximately 77% covered, exceeding the recommended maximum coverage of 70 %. Figure 1:3 displays buildings up to 9 storeys rather than the recommended 5-7 storeys in the 2002 redevelopment plan. This type of growth has led to informal vertical development. Kariakoo's skyline is fragmented, showing a type of vertical landscape that can be described as "informal" (Lupala & Bhayo, 2014).

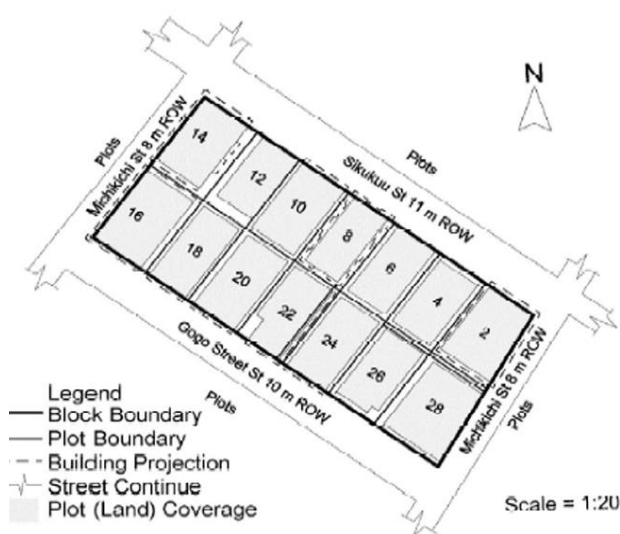


Figure 1:2. Plot layout and building coverage in Block 43, Kariakoo Area
Source: Lupala & Bhayo, 2014

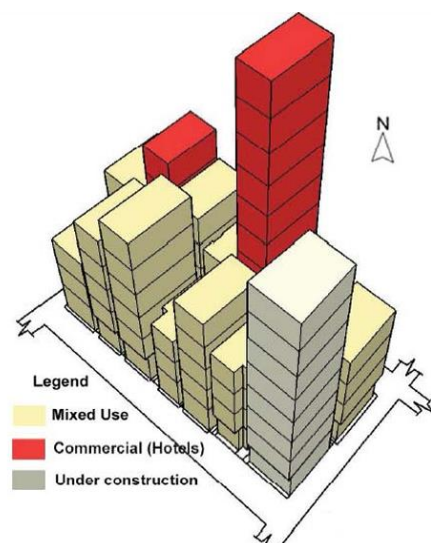


Figure 1:3. Plot coverage 77%; approved height 5-7 storeys, Kariakoo Area
Source: Lupala & Bhayo, 2014

Magina and Bwire (2018) also noticed a breach of regulations in Mwanza, which is the second biggest city in Tanzania. Factors such as natural, economic, technical, and social aspects of resilience were seen as significant influences leading developers to breach formal planning regulations. Natural factors such as hilly and rocky topography and small plot sizes were the primary reasons behind the violations. Developers failed to adhere due to larger household sizes and a lack of awareness of the established guidelines. Developers are motivated by the property market, especially rental units, to maximise the use of plot space to boost profits from rented spaces.

Further, through the Tanzanian Government's urban planning regulations (space standards) of 2018, the government provides the space standards for informal areas – an action which indicates a concern to regulate or guide the spatial developments in informal urban spaces (Ice, 2018; Wankogere & Sanga, 2021). The government is trying to engage building permits to control spatial developments in informal settlements, albeit in a very relaxed manner, as they do not fit the purpose, as they are based on Western norms and values, which conflict with the informal norms of production of space (Bahendwa, 2013; Msuya et al., 2018; Omar, 2018). The flaws in the Master Plans and Strategic Urban Development Plans (SUDP) resulted in the creation of the Community-Based Infrastructure Upgrading Project (CIUP) and regularisation (Todd et al., 2019). The Land Act No. 4 of 1999 required the formalisation of informal properties. Regularisation remains ongoing to this day, to improve and legalise each informal settlement. Nonetheless, as per Izar & Jean-Baptiste (2019), the National Policy of Regularisation and Formalisation in Tanzania is intended to support gentrification and substantial alteration of the current structure, especially in informal settlements near main highways. In certain situations, residents have taken the first step to formalise informal areas (Kironde, 2019), with the private sector collaborating closely with communities, local authorities, and the Ministry of Lands during regularisation efforts. Nevertheless, the government tried to overlook the customs, beliefs, and locations established in the area. This circumstance caused the residents of the Makongo settlement to refuse a plan created by the Dar es Salaam city authority because it completely disregarded the arrangement set up by the locals.

Scholars in urban planning and architecture have also conducted studies on informality in Tanzania. The studies include the ones by Bahendwa (2013) and Kalugila (2014), which have

commented on the positive aspects of informal processes of producing urban spaces and how they interfere with formal traditions. However, such studies put less emphasis on how the adaptation of informal spatial dynamics takes place and the impacts the adaptation attempts pose on urban forms' inclusive and adaptive capacities. Further, the approach to studies on informality in Tanzania has not dwelt much on engaging the complex systems thinking lens to gain the reality of the complex systems of informality adaptation, informal spatial dynamics, and resilient urban forms. The Urban Planning Policies, regulations and plans in Tanzania are also not very concerned with the adaptation of informal spatial dynamics; instead, they focus much on transforming the informal. Building on this background, the government of Tanzania seems to be far from reaching the successful adaptation stages like the one mentioned by Silva (2018), where planning systems interact with informality and, from that interaction, learn how to improve planning rules while promoting an upgrade of informal interventions. This trend raises questions such as how the government should successfully embrace informality. Where do the formal planning systems take informality together with its associated spaces? Is it to eliminate it or embrace it within formal traditions?

1.3 Statement of the problem

To a greater extent, the spatial development of city-form in least-developed countries is centred on formal and informal processes. Principally, while governments strive to use formal standards to achieve universal urban form, they are yet attempting to adapt a share of the informal strategies to improve the relevance of the production of urban space. However, such an adaptation attempt is done with a less clear understanding of the norms, values, approaches and the structure of the informal system that governs the spatial change. The uncertainty of the outcome of the envisaged formal-informal approach to the design, planning, and architecture of the urban form demands a focused study of informal spatial dynamics and their implications for formal tradition.

It appears that, although some key urban features are addressed, it is unclear whether the associated informal spatial dynamics can effectively contribute to the creation of the desired planning and architecture of the city. Therefore, an effort has to be made to accumulate further knowledge on informal norms, values and experiences to conceptualise new insight into formal discourse.

1.4 Research Objectives

1.4.1 The main objective of the study

The main goal of this research is to understand how people build cities in informal ways. By learning about the methods and values of informality, we can find helpful ideas that help connect these practices with formal traditions of building cities.

1.4.2 Specific objectives

- (i) To explore the way people, acquire land and organise space in informal settlements.
- (ii) To examine the factors affecting developers' decisions on spatial changes in informal settlements.
- (iii) To analyse the impact of adapting the informal spatial dynamics on urban form.
- (iv) To examine the rationale behind governments' adaptation of informal spatial dynamics.

1.4.3 Research questions

- (i) How do people acquire land and organise spaces in informal settlements?
- (ii) What are the factors causing spatial changes in informal settlements?
- (iii) How does the adaptation of informal spatial dynamics affect urban forms?
- (iv) Why do governments adapt the informal spatial dynamics?

1.5 Significance of the study

This research is a valuable contribution to the research community as it sheds light on important issues related to informal space production and use. It discusses the factors influencing actors' decisions to engage in informal practices, the spatial effects of adapting informal spatial dynamics, and the reasons behind the Tanzanian government's decision to embrace informal spatial dynamics. This knowledge benefits various sectors, including public, private, and public-private partnerships. For example, understanding key actors involved in informal space processes can guide the public sector's interventions appropriately. Further, the knowledge of the factors influencing informality in urban processes can inform the approach to integrating useful lessons from informal space production in urban design discourse. Furthermore, understanding the impacts of informal spatial dynamics can help urban planning authorities make informed decisions on whether to continue embracing informal spatial dynamics.

The study will help the research community by providing insight into a productive methodology for conducting this kind of research. This involves identifying the techniques for uncovering the unwritten rules that influence informal spatial changes and the norms and values that guide the development and use of informal built spaces. Professionals, especially those in architecture, urban design, and urban planning, will benefit from understanding the concept of adaptation, often seen in studying living organisms thriving in their environments.

1.6 Definition of terms

This section provides definitions of some key terms and phrases employed in this study. It highlights the concepts based on different approaches and perspectives by which a conclusive definition suitable for this study can be drawn. Thus, the relevant terms and phrases discussed in this section include: Dwelling Houses, Dwelling compound, Land acquisition, Land speculator, The land and property brokers, The local *fundi* (Mason), *Mtaa* Executive officers, The local leader, Adaptation, Socio – economic resilience, Urban form

1.6.1 Adaptation in Production of Space

Adaptation is when someone or something changes in order to better fit their surroundings, or the characteristic that develops as a result of this change. Adaptation can also refer to the act of changing something to make it suitable for a new purpose or situation. In urban planning and design terms the term adaptation can be borrowed and used to refer to the interaction thesis which occurs when the formal and informal urban spaces co-exist and interact in a beneficial manner. It is a way in which planning systems interact with informality and from that interaction learn how to improve planning rules while they promote an upgrade of informal interventions (Silva, 2018). In this study adaptation of informal spatial dynamics refers to making the informal spatial dynamics fit in the processes of production of space to achieve the socio – economic resilient urban forms. It includes the planned and unplanned actions done by governments to embrace the positive values of informality within the traditions of production of space.

1.6.2 Urban Complexity

The term complexity refers to the higher-order phenomena arising from a system's many connected, interacting subcomponents and describes both dynamics that means the processes and structure that means the resulting patterns and configurations (Boeing 2018). The

complexity of urban form is mostly manifested as ambiguous relations between elements of the physical form and between the physical form and human behaviour (Song, 2016). Complexity makes urban environments more resilient and robust, providing greater opportunities for social encounter, mixing, and adaptation through social learning. Increase in complexity in the city involves increasing the mixture of urban uses and functions, which allows unrestricted access to the city (Tadi & Vahabzadeh Manesh, 2014). In this study, complexity refers to the informal processes and traditions of production of space together with their resulting spaces. The informal activities of space production of space such as acquiring a piece of land, building a house and utilisations of resulting spaces and their associated outcomes are linked to complexity quality because they are unpredictable as they change in response to changing social – economic situations with time.

1.6.3 Dwelling house

A dwelling⁴ is a home where someone lives. Anything people live - in is a dwelling. Houses, apartments, tents, trailers, and igloos are all dwellings. A house⁵ is a building in which people live, usually the people belonging to one family. A dwelling house⁶ is a house or sometimes part of a house that is occupied as a residence in distinction from a store, office, or other building and that may legally include associated or connected buildings within the same curtilage. In Tanzania, individual dwelling houses are those designed for use as dwellings by single families, together with such outbuildings as are typically used therewith, but not including dwelling houses designed for occupation by more than one family, and not including dwelling accommodation built over or attached to commercial, office or industrial buildings of Groups E to M inclusive (URT, 2018). Dwelling houses are those occupied principally as dwellings, but also used by the occupiers or tenants for professions and occupations and not used in any way as industrial buildings or for the public display or sale of goods or for the storage of bulky equipment or materials used in the occupier's profession or occupation (URT, 2018).

⁴ "Dwelling." Vocabulary.com Dictionary, Vocabulary.com, <https://www.vocabulary.com/dictionary/dwelling>. Accessed 18 Jan. 2025.

⁵ HOUSE definition and meaning | Collins English Dictionary. <https://www.collinsdictionary.com>. accessed in 18th November, 2024 at 1:25 p.m.

⁶ Merriam-Webster. (n.d.). Dwelling house. In Merriam-Webster.com dictionary. Retrieved January 18, 2025, from <https://www.merriam-webster.com/dictionary/dwelling%20house>

1.6.4 Dwelling compound

The term “Compound”, when applied to a human habitat, refers to a cluster of buildings in an enclosure, having a shared or associated purpose, such as the houses of an extended family. The enclosure may be a wall, a fence, a hedge or some other structure, or it may be formed by the buildings themselves, when they are built around an open area or joined together.⁷ According to Oliver (1997), cited in Mosha, (2011), a dwelling compound is a built environment which is customarily enclosed by a wall or a hedge. In this study, dwelling compounds include unfenced enclosures comprised of buildings with a shared or associated purpose.

1.6.5 Informal settlement

The phrase Informal settlement has various meaning though the widely used one was given by the UNHabitat III. The UNHabitat III define Informal settlements as residential areas where 1) inhabitants have no security of tenure vis-à-vis the land or dwellings they inhabit, with modalities ranging from squatting to informal rental housing, 2) the neighbourhoods usually lack, or are cut off from, basic services and city infrastructure and 3) the housing may not comply with current planning and building regulations, and is often situated in geographically and environmentally hazardous areas (Willis, 2019). In addition, informal settlements can be a form of real estate speculation for all income levels of urban residents, affluent and poor. Slums are the most deprived and excluded form of informal settlements characterised by poverty and large agglomerations of dilapidated housing often located in the most hazardous urban land. In addition to tenure insecurity, slum dwellers lack a formal supply of basic infrastructure and services, public space and green areas, and are constantly exposed to eviction, disease and violence.

1.6.6 Informal spatial dynamics

Informal spatial dynamics refer to the informal processes of space production that respond to various changing social, economic, political factors. The process involves the activities of acquiring a piece of land, building a house, and controlling or utilizing the spaces that evolve from the process.

⁷ ("compound, n.2." OED Online. Oxford University Press, September 2015. Web.9 October 2015).

1.6.7 Land acquisition

Land acquisition means the taking of or alienation of land⁸, buildings or other assets thereon for purposes of the project. This study uses the definition given by Kironde (1995), which defines land acquisition as administrative procedures outlining the institutions and the steps that citizens and public authorities must follow to achieve their objectives of acquiring or providing land to the end-user. According to Kironde (1995), land tenure in Tanzania is regulated by the Land Ordinance of 1923, which establishes all land as publicly owned and vested in the President. In urban areas, access to land occurs through formal and informal mechanisms. The formal system operates within government-established procedures for land allocation and transfer. Land acquired through this system is typically planned and has a recognised legal status. Conversely, the informal land delivery system operates outside official procedures. This includes private transactions for land that is often unplanned and lacks formal recognition. Informal systems may also involve access to planned land through unauthorised means, such as private sales facilitated or sanctioned by government officials. Additionally, informal land acquisition can occur through squatting, where individuals occupy land without the owner's consent, as noted by Kironde (1995).

1.6.8 Land speculator

The term “Land speculator” stands for someone who practices land speculation. Oyedeji, (2022) defines land speculation as a form of investment for future gain in the form of appreciation in land value (Oyedeji, 2022). According to Kinuthia et.al (2021), land speculation signifies an aspect of the time horizon where investors hold land in anticipation of future development opportunities or an increase in land value. In that regard, a land speculator is the one who purchases land for future sale, hoping the value will increase with time. Speculators are involved in land subdivisions and acquire land for housing through informal land transactions for speculative purposes. (Nuhu, 2019). However, as per the National Land Policy of 1995, land commoditization and speculation are prohibited in Tanzania.

1.6.9 The land and property brokers

Brokers function as intermediaries connecting sellers with buyers. They make their living by facilitating land transactions through the linkage of interested parties (Wolff et al., 2018). Engaging in brokering is a service provided and a profession that individuals opt for to sustain themselves. Occasionally, brokers participate in negotiations over prices to align with the affordability of buyers (Nuhu, 2019). Sellers can also reach out to brokers when they aim to market their land. Brokers employ various strategies to promote plots available for sale, such as displaying informal posters by the roadside. In addition, they utilise social media platforms like Facebook, Instagram, Blogs, WhatsApp, and other applications to market plots for sale. Members of the community serve as overseers of each other's plots within the area and inform one another in the event of trespassing or land invasion.

1.6.10 The local Mason

This study uses a definition of local fundi that was given by Nguluma (2003), which defines the local *fundi* as an informally trained artisan, including masons, carpenters, electricians and plumbers who are actively engaged in construction work at local neighbourhoods. The local mason is a “self-educated architect” and has been playing the role of a formally trained architect and engineer in the informal settlements. In Tanzania, the local masons play a significant role in the informal construction sector, though recently they have been engaged even in the Government's construction projects that are executed under the Force Account system. Through the Public Procurement Act of 2011, its regulations from 2013, and its amendments from 2016, the government of Tanzania invested in the adoption of the Force Account Mechanism, inviting local masons from the community to participate in the project execution as opposed to contractors (URT, 2017). The Force Account projects were successfully implemented and completed using construction knowledge, attitudes and practices by local contractors/fundi, among others (Kavana, 2022; Massawe, 2023).

1.6.11 The local leader

Local leader, called *Mjumbe* (singular) or *Wajumbe* (plural) in Swahili, acts as official representatives of political parties at the neighbourhood level. Even though they are connected to formal systems, these roles are not official or paid, giving them a semi-formal standing (Manara, 2020). *Wajumbe* commonly operate through informal or semi-formal methods and are a common aspect of African societies. Throughout history, informal and traditional property

systems in various regions of Africa have strongly depended on local leaders since the colonial era (Boone, 2014). While local leaders primarily have a political role, they also frequently take on additional social and administrative duties that go beyond their official responsibilities. For example, local leaders coordinate and rally community members for public gatherings, mediate family conflicts, provide identification letters for banking, educational, or government purposes, supervise waste management services, and support government initiatives such as distributing identification documents. Moreover, neighbourhood chairpersons and executive officers often engage local leaders in land-related issues like acting as witnesses in land disputes and confirming informal ownership for various parties such as potential buyers, municipal officials, or banks (Manara & Regan, 2022). Being a witness in land transactions is a rare occasion where a local leader can be paid for their assistance, according to Manara & Regan (2022). Local leaders work within both official and unofficial land access structures. At the ward and sub-ward levels, they are crucial in helping buyers and sellers engage in informal land transactions. During the transaction process, sellers hand over agreements to buyers. At the same time, both parties usually give a fee of around 10% of the transaction value to the local leaders' office for their assistance (Nuhu, 2019).

1.6.12 Socio – economic resilience

Socio-economic resilience of urban form is the ability of a city's physical structure to withstand and adapt to social and economic shocks and stresses, like cultural or traditional changes and the consequences of economic shocks include unemployment or a decrease in income (Rahman et al., 2021).

1.6.13 Sub-ward Executive officers

Ward Executive Officers (WEO) oversee all government operations and Ward Development Programs at the ward level and present a report to the Municipal Executive Director. Ward Executive Officers are responsible for supervising all social services such as health, education, environmental protection, and agriculture, as well as maintaining peace and security. They also oversee the work of *Mtaa* Executive Officers and Street chairpersons to ensure they fulfill their duties. Furthermore, WEOs oversee the collection of taxes and guide the Wards Development Committee (Jasmine, 2014).

1.6.14 Urban form

The term "urban form" generally refers to the physical attributes of built-up areas, such as the size, shape, density, and arrangement of settlements (Shukla, 2023; Williams, 2014; Živković, 2020). Urban form is made up and usually analysed using its three components namely; the plot, buildings, and open spaces.

1.6.15 Production of Space

This is the creation of spaces such as the physical space which involves activities like the tangible and noticeable alterations to a setting through actions such as constructing, excavating, gardening, building, painting, crafting, relocating items, and changing. Space can also be produced when trying to shape, manipulate, and control space along with the people and activities permitted or required to utilize it (Zieleniec, 2018). In managing space, individuals set up regulations to control entry to certain areas and territories both physically and visually, utilizing objects like barriers, hedges, and partitions to outline the boundaries and functions of spaces (Nguluma, 2003).

1.7 Structure of the Thesis Report

The thesis comprises nine chapters. Chapter One outlines the problem area, background, problem statement, study objectives, significance, and thesis structure. Chapter Two reflects on the literature review. Chapter Three details the research methodology, including design, research strategy, case selection, data collection methods, reliability, validity, generalisation of findings, and the methodological challenges that were encountered during the study.

Chapters Four, Five, Six, and Seven provide the empirical findings, whereas Chapter Four provides information on the way the dwelling owners acquired their lands and organised their dwelling space. Chapter Five discusses the factors that were governing spatial changes in Mamboleo "B" and Kilungule "A". Chapter Six discusses the way adaptation of informal spatial dynamics takes place in the analysed settlements. Chapter Seven discusses the reasons that made the government of Tanzania decide to adopt the informal spatial dynamics.

Chapter Eight discusses the empirical findings through a cross-case analysis. It examines the issues that arise from the research and consolidates the main findings. The analysis compares unique aspects of land acquisition, spatial organisation, adaptation and factors influencing

developers' decision-making in Kilungule "A" and Mamboleo "B" settlements. It also discusses the impacts of adapting informal spatial dynamics on urban forms, generalises observations, connects them with existing theories, and presents the findings. Chapter Nine offers conclusions and recommendations for capturing informal spatial dynamics in informal urban spaces to create resilient urban forms. It also suggests policy implications, planning recommendations, and areas for further study.

CHAPTER TWO

2 LITERATURE REVIEW

2.1 Introduction

This chapter aims to present and discuss the key concepts and theories chosen to guide this study. It begins by discussing the key concepts involved in the study, namely: urban informality, informal settlement, informal land acquisition, space and its dynamics, organisation of space, urban form in humanistic perspective, resilience in urban form, urban complexity, adaptation in production of space, evaluation of adaptation attempts. Having provided the discussion on the key concepts involved in this study, it further highlights the global evolution of adaptation attempts and their impacts on urban forms, attempts to adapt the informal spatial dynamics in Tanzania, the historical evolution of adaptation attempts in Tanzania, and the contemporary adaptation attempts and the adaptation policy framework in Tanzania. The discussion moved on to explaining the theories used in this study namely, the Unitary theory of space, Cultural-Historic Activity Theory (CHAT), Systems Evaluation Theory (SET), and Place Theory along with some criticisms to the theories. Finally, the section provided, in graphical form, the theoretical and conceptual frameworks adopted in this study, along with the overall summary of the chapter.

2.2 Understanding the Key Concepts

This document offers an in-depth exploration of informal spatial dynamics, particularly within the context of informal settlements. It examines historical and contemporary interpretations of space, highlighting the transition from static, geometric views to dynamic, socially constructed perceptions, drawing on the work of notable theorists such as Lefebvre, Foucault, and Soja. It elaborates on Lefebvre's Unitary theory of space, which divides space into physical, mental, and social realms. The discussion extends to structuralism's insights into the relationship between space and human beings, its criticisms, and the evolving complexities in understanding space through the lens of informality. The document further explores how informal spatial dynamics adapt to human needs and interact with formal planning systems, underlining the significant socio-economic, cultural, and political factors that shape these interactions. Additionally, it addresses the challenges in evaluating the impacts of adapting informal spatial dynamics on urban form, stressing the importance of understanding both intended and unintended outcomes in such evaluations.

2.2.1 Urban Informality

The concept of informality is intricate due to its involvement in various spheres (Lutzoni, 2016). The term refers to more than just the city's physical layout; it encompasses its cultural, economic, social, and political structures (Lutzoni, 2016). Further, efforts to define urban informality are frequently associated with particular ways of thinking and broader discussions within specific academic fields, eras, and locations (Banks et al., 2020). At a most basic level, urban informality is a form of producing the built environment and occupying land that differs from established norms (Lopez et al., 2020). It is a multidimensional process that can manifest in numerous ways: the absence of legal property rights, non-compliance with rules and codes, lack of planning, low-quality and low availability of urban services, and poor environmental conditions in a human settlement. According to Dovey (2012), informality refers to practices that operate beyond the state's regulatory framework. It is a system of organisation that can only evolve if there is a rule or formal structure to support its progress (Lutzoni, 2016). Urban informality is not created by experts like planners and architects, who plan, predict, and design based on their beliefs about the needs of the people and the city in the next twenty years. Banks et al. (2020) describe urban informality as a 'system of norms that govern the process of urban transformation'. In addition, Roy claims that;

'By informality, I mean a state of deregulation, one where the ownership, use and purpose of land cannot be fixed and mapped according to any prescribed set of regulations or the law' (Roy, 2009, p. 80). 'Informality is inscribed in the ever-shifting relationship between what is legal and illegal, legitimate and illegitimate, authorised and unauthorised' (Roy, 2009).

This study adopts with minor corrections the definition of urban informality by Lopez et al. (2020), which says 'urban informality is a form of producing the built environment and occupying land that is different from the established norms'. Informality in this study the form of occupying land may be through established norms as was noted by Nguluma (2003) that informal settlements in Tanzania may occupy land legally. Further, Informality manifests in informal processes of space production, such as the extension and renovation of buildings at micro-spatial scales in response to various social, economic, and political factors. Since informality does not occur in a vacuum, the space where informal practices take place is often

a formal space that has been informalised, or, more specifically, an informal space or settlement (Willis, K. 2019).

2.2.2 Informal Settlement

Informal settlements exist in various forms, typologies, dimensions, and locations worldwide. While predominantly found in the global south, informal settlements are present in both developing and developed countries. They are identified by a wide range of names such as squatter settlements, favelas, poblaciones, shacks, barrios bajos, and bidonvilles (World Bank, 2022). Given such a different context, it is not easy to have a generalisable concept of informal settlements. However, there have been some attempts to define an informal settlement as a noun rather than a verb – which is the interest of this study. For example, The World Bank (2022) defines informal settlements as residential areas in which residents have no land rights or tenure and which range from illegal occupation to informal renting of dwellings. The Organisation for Security and Cooperation in Europe (OSCE) defines informal settlements as any settlements in which housing is built without the necessary permits or land ownership rights (Worldbank, 2022). The United Nations Economic Commission for Europe (UNECE) defines informal settlements as illegal residential structures without basic infrastructure, security of tenure, adequate housing, etc (Worldbank, 2022). The International Development Research Centre (IDRC) refers to informal settlements as any residential areas that are outside the formal housing system and were established and built without the consent of the competent authorities or without complying with the established building, zoning or land-use laws. These are 1. areas where groups of dwellings have been built on land to which the occupants have no legal entitlement or have taken possession of the land illegally; 2. unplanned settlements and areas where dwellings do not comply with existing planning and building regulations. However, the widely used definition of informal settlement as a verb was availed by the UNHabitat III who defined Informal settlements as residential areas where 1) inhabitants have no security of tenure vis-à-vis the land or dwellings they inhabit, with modalities ranging from squatting to informal rental housing, 2) the neighbourhoods usually lack, or are cut off from, basic services and city infrastructure and 3) the housing may not comply with current planning and building regulations, and is often situated in geographically and environmentally hazardous areas. In addition, informal settlements can be a form of real estate speculation for urban residents across all income levels, affluent and poor.

However, most definitions of informal settlements seem to concur with the statement by Dovey (2013), who says that ‘settlements are referred to as ‘informal’ because they transgress the state's formal codes in land tenure, urban planning, design, and construction’. Informal settlements differ from Slums, as Slums are the most deprived and excluded form of informal settlements characterised by poverty and large agglomerations of dilapidated housing often located in the most hazardous urban land. In addition to tenure insecurity, slum dwellers lack a formal supply of basic infrastructure and services, public space and green areas, and are constantly exposed to eviction, disease and violence (UN-Habitat, 2015).

There are some observations which make the meanings of informal settlements in Africa differing from most worldwide views. For example, on the aspect of land ownership, observations made by Okpalla (1987) in Nguluma (2003) indicate that, in most African societies, those referred to as informal have identifiable rights over the land they occupy or seek to occupy through tradition and customary land ownership; as such, the concept of unlawful possession of land is an imported one. Further according to Nguluma (2003), in many African countries, informal settlements began to attain de facto status, acquired through the length of time for which a settlement had been tolerated or ignored, or through the extension of administrative recognition and the provision of municipal and urban services. On the aspect of spatial quality of informal settlements, it is also pointed out by Nguluma (2003) that, most of informal settlements in Tanzania are well developed and accommodate people of varying socio-economic statuses as also noted by other scholars like Kalugila (2014); Bahendwa 2013; and Rasmussen 2013. Stressing on the same observation, Nnkya states that: *Most informal settlements in Tanzania have a relatively high quality of shelter and related services and infrastructure, not significantly different from those in formal housing areas* (Nnkya, 2002). Perhaps the government's tolerance towards informal settlements might have indirectly contributed to improvements in housing quality in these areas. Further, Nguluma (2003) noted that, informal settlements in Tanzania are areas that have developed outside the official land development process and procedures. They are residential agglomerations where land occupation is not illegal – conflicting with Kombe, (2010) who noted cases of land grabbing taking place in informal settlements of Dar es Salaam especially in the peri-urban areas. Therefore, the settlements may occupy areas owned legally or illegally. This study, defines informal settlements the residential agglomerations that have developed outside the official

land development process and procedures such as the state's formal codes in land tenure, urban planning, design, and construction' while occupying land legally or illegally.

Population growth, rural-urban migration, a lack of affordable housing, poor governance (especially in policy, planning, and urban management), economic vulnerability and low-paying jobs, marginalization, and displacement brought on by conflict, natural disasters, and climate change are some of the interconnected factors that lead to informal settlements. However, according to Schwab (2018), informal settlements in Latin America are created by public initiatives as well as self-help and self-build projects but are also formed by state intervention (García, 2013), and are therefore a blend of formal and informal socio-spatial tactics. Further, according to Dovey (2013), informal settlements normally occupy interstitial and marginal land often in ambiguous terrains of cities (Dovey, 2013). They can be found in interstitial easements that border freeways and railroads, as well as urban waterfronts and escarpments. They can thrive in the backstage areas behind official street walls and infiltrate former industrial and institutional enclosures. Significant exceptions to this interstitiality, where informality permeates a larger district, are massive slums like Dharavi in Mumbai, Rocinha in Rio de Janeiro in Brazil, and Kibera in Nairobi. However, in Tanzania, informal settlements occupy a variety of types of land, including interstitial and marginal-use land, as well as areas with favorable characteristics like flat terrain. This study therefore believes that informal settlements can occupy land of any quality, be it planned or unplanned, or with harsh terrain or without.

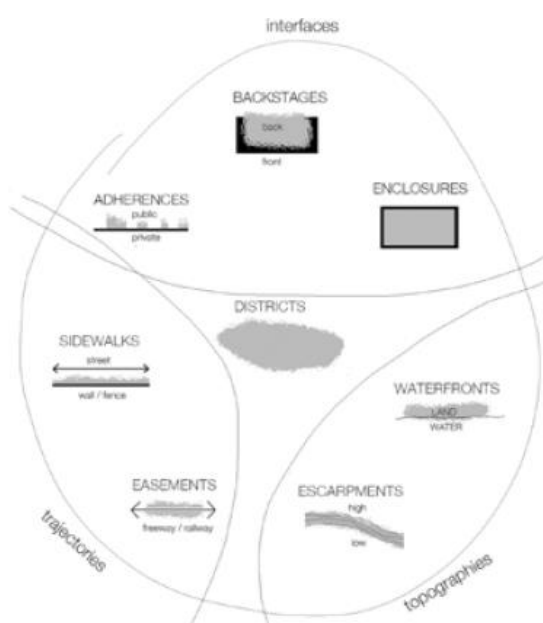


Figure 2:1The informal settlements' typology
Source: Dovey & King (2011)

In recent times, perceptions surrounding the concept of informality and informal settlements have changed from the 'crisis or critical frame' where informal settlements were perceived as ungovernable, illegal, dangerous, filthy, disorderly, and chaotic to heroic perceptions or emancipatory frame' in which the informal settlements are considered as extra-legal settlements resulting from people's spontaneous and creative response to the government's incapacity to meet their needs (Roy, 2005; Hall, 2014). Crisis perceptions also view informal settlements as providers of affordable housing for poor people, whereas, in some cases, such as Tanzania, they are highly diverse, with people of all income levels living side by side (Kalugila, 2014; Rasmussen, 2013). Adding more to the perceptions of informal settlements, Pojani (2019) asserts that, within the 'emancipatory' perspective, informal settlements represent independence and innovation by the impoverished population. In this way, they can promote upward social mobility and act as a rich environment for grassroots democratic practices and political engagement (Rocco & van Ballegooijen, 2018). A different perspective views informal housing as a result of excessive urban growth, severe inequality, the perpetuation of poverty, the lack of democracy, exclusion from politics, unstable jobs, and the absence of safety nets during illness or disasters (Pojani, 2019).

From the emancipatory framework emerged the tradition of the formal-informal continuum, which holds that the formal and informal sectors are not separate and can coexist and interact in mutually beneficial ways (Dovey, 2012). In urban terms, for example, while cities may be more or less formal, all cities embody a mix of formal and informal processes (Dovey, 2012). On a smaller scale, while certain districts are identifiable as informal settlements, these also embody a formal/informal mix (Kamalipour, 2020). 'Informality' also implies a lack of formal control over planning, design, and construction, yet it is a two-fold concept: informal/formal. The positive or heroic perceptions have contributed to the exploration of many of the positive values informality has, as well as to much other useful information that informs policies, projects, and programs. This study views informal settlements as a positive phenomenon resulting from people's reactions to the government's failure to provide housing for those living in urban areas. It considers informality and informal settlements as a laboratory for exploring the hidden rules that govern spatial change, which will help inform formal traditions on appropriate ways to embrace informality. However, this study also recognises the challenges associated with informality but believes in formal–informal interaction as a means of achieving adaptive urban forms that support the majority of the urban population.

2.2.3 Informal Land Acquisition

Urban dwellers acquire land for various purposes, the main being dwelling accommodation. Land acquisition means the taking of or alienation of land,⁹ buildings or other assets thereon for purposes of the Project. Gironde (2015) categorises land acquisition into large-scale and small-scale land acquisitions. Modes of land acquisition differ among the actors in this process, who operate in private, public, or public-private partnership sectors. However, according to Murali & Arul, (2016), in whatever case, such ways fall into a broad variety of compulsory and non-compulsory powers. Ono *et al.* (2021) present four types of land acquisition by the private sector (individuals or groups) in Kenya: squatting, allocation by a village elder, transfer from structure owners, and inheritance. On the other hand, the public sector (state) can acquire land in three ways: negotiations and persuasion, legalised force, and compulsory acquisition (Kombe, 2010; Sanga, 2018).

“Those countries that have been comparatively successful in land acquisition generally have a broad variety of compulsory and non-compulsory powers at their disposal. Some countries may heavily on compulsory powers, as India does, and others, like Singapore, on voluntary purchases. Yet, each has a full range of powers to acquire land. As a practical matter, a realistic capability to acquire land compulsorily is necessary to induce citizens to negotiate in good faith” (Murali & Arul, 2016)

Compulsory acquisition is the power of the government to acquire private rights in land for a public purpose, without the willing consent of its owner or occupant (Jonathan et al., 2012). A variety of names are used to describe this power depending on country’s legal traditions, including the eminent domain, expropriation, takings, and compulsory purchases. According to Kombe (2010), Compulsory acquisition is usually effected through the ‘power of eminent domain’, which gives the state the power to expropriate private property for public use without necessarily seeking the owner’s consent. Compulsory land acquisition (CLA) refers to the government's power to acquire private rights in land for societal benefits in exchange for compensation (Wankogere & Sanga, 2021). According to Kombe (2010), compulsory land acquisition involves four key steps, namely (i) Planning and the decision to acquire land, (ii) Legal preliminaries, including getting statutory authority and serving notices, (iii) Field

⁹Vocabulary.com. (n.d.). Land. In *Vocabulary.com Dictionary*. Retrieved January 18, 2025, from <https://www.vocabulary.com/dictionary/land>

investigations, including valuation, and (iv) Payment of compensation to those being dispossessed.

Securing land in informal settlements can involve settling on unclaimed land, occupying uninhabited or abandoned areas, or connecting to structures in the formal city, such as extensions of existing buildings (Dovey, 2012; Wakely & Riley, 2011). Typically, informal land is inexpensive and can be found on the outskirts of the city or within city limits (McCartney & Krishnamurthy, 2018). Land ownership is informal and does not adequately protect its inhabitants. Land transactions are frequently validated through informal sales agreements, legal contracts, and the involvement of local leaders confirming the seller's ownership. These deals involve various individuals, including small-scale entrepreneurs, local brokers, contractors, officials, and, occasionally, court clerks. They rely on interpersonal connections and faith that are established and grasped by the individuals engaged (Opoko et al., 2018). In many cases, individuals understand their rights and responsibilities through verbal, mimetic, or taught communication. Land ownership is granted through de facto titles issued by community heads, tribal leaders, and other land ownership bodies. Land subdivision ranges from landowners selling directly to wholesaling parcels to informal developers who divide land, mark boundaries, and sell to households. The methods of obtaining land vary among individuals in the private and public industries. Ono & Kidokoro (2020) outline four ways in which individuals or groups in the private sector acquire plots in Kenya, including squatting.

Mersha et al (2021) provide insight into how individuals in Ethiopia acquire land through informal methods. As stated by Mersha et al (2021), the procedure progresses through various phases. These tasks involve finding land available for purchase, discussing the size of the land, haggling over the price, marking out the boundaries of the land to be sold, and ultimately, formalising the transfer of land rights with traditional written agreements (sales contracts). Land brokers, residents, gatekeepers, local labourers, friends, relatives, and local officials all provide information on where land for sale can be found. Elders, leaders of traditional social institutions, community leaders, neighbours, relatives and friends have a significant impact on controlling informal land changes (Mersha et al, 2021). In the same vein, Nkurunziza (2007) discusses the use of informal methods for acquiring land in Uganda. He also mentioned that the process of gaining access to land can be divided into various steps, including gathering information on the availability of rights, negotiating a land deal, adjudicating and demarcating the plot, and proving

the transfer of land rights. This study examines the informal means of acquiring land in urban informal settlements.

2.2.4 Space and Its Dynamics

Though there is some debate on what constitutes space, there is much consensus that it is a relationship between physical (or '*spatial*') qualities and other (often '*social*' and '*semiotic*') qualities. The definition of '*space*' in this research is not a purely geometric boundary, but one that is bound up with other social and semiotic qualities. (Rice, 2015). This study deals with the physical space where people move through, live within, and think in terms of. Along this line, Permana et al. (2019) Define space as a network of norms, activities, and artefacts that can facilitate, accommodate, and shape people's lives. Rice (2015) categorises space into geometrical, social space, temporal network, and triadic space.¹⁰ In geometric terms, space was bounded and described by Euclidean geometry. According to Rice (2015), before the 1970s, the majority of human geographers believed that space was a neutral container, segregated from people, societies, cultures, economies, and politics. Space has always been seen as static, inert, and neutral - an emptiness filled with objects. The new geographers and theorists, such as Lefebvre, Foucault and Soja, challenged contemporary conceptions of space, insisting that space is not given but produced. (Skordoulis & Arvanitis, 2008). In social-space terms, space was reconceptualised as more than geometrical with the imbrications of social entities. Thus, socially produced space, spatiality, is not inert and static but is itself constitutive of social relations (Rice, 2015).

The idea of spatial dynamics arises from the interaction between people and space, or an ever-changing connection between individuals and their surrounding environment. The spatial dynamics result from actors' reactions to emerging situations during their interactions within the environment's physiography, as they address problems or seize opportunities. Structuralists were the original ones to uncover and methodically study the connection between space and humans. The Structuralists thought that traditional built environments were shaped by "deep structures." During the 1960s, Aldo van Eyck, a Dutch architect, examined how the social structures of the West African Dogon people related to the architectural styles of traditional societies (Jaschke, 2012). It was determined that the Dogon cultural system controls how land

¹⁰ "Trialectics of space" refers to Henri Lefebvre's concept of a spatial triad—spatial practice, representations of space, and representational spaces—that attempts to understand space as a product of social, historical, and personal dimensions, moving beyond a simple understanding of space as just physical dimensions.

and housing are planned and inherited, distinguishing between communal and personal land use (Dainese, 2014). Nevertheless, starting in the 1960s and 1970s, structuralism faced criticism for its emphasis on historical aspects, its privileging of deterministic structural forces over human agency, and its attempt to simplify human experience into specific, universal underlying structures. Söderqvist (2012) argued that structuralism focused on users' ability to modify the building rather than democracy. On the flip side, structuralism aimed to depict social patterns and connections considered as enduring, unchanging, and unalterable. In this era, there was an increase in the need for complexity frameworks and more advanced techniques to effectively address complexity and open systems (Turner & Baker, 2019). This enables researchers to move beyond unchanging structures and encompass both dynamic (unstructured) and structured processes (Araabi, 2015). According to Irwin et al., (2009), spatial dynamics refer to processes that involve dynamic relationships between individuals and their environments. McCartney & Krishnamurthy (2018) view spatial dynamics as the impact of different social, economic, cultural, institutional, political, situational, and location factors on space.

The informal spatial dynamics involve the process of production of space characterised by the spontaneous processes of occupation of the territory, absence of property titles, self-building of houses, illegal inhabiting in contexts with rapid urbanisation, temporary uses of space, forms of self-organisation and development of urban areas at city edges and others (Lutzoni, 2016). The actual activities in the processes of producing space involve typical increments such as 'extend', 'attach', 'replace', 'divide', 'connect', and 'infill' whenever the need arises (Kamalipour & Dovey, 2020). The loose or absence of legal limitations provides informal settlements with flexible environments that allow a continuous process of transformation, enabling adaptation to changing ways of life through the multifaceted, competitive and interactive layers of negotiation, ownership and consent in the use of spaces. Developers of informal spaces construct and utilise their houses and spaces according to their individual preferences and needs (Chitengi, 2020). This study is interested in informal spatial dynamics related to land acquisition and the organisation of space that dwellers of informal urban areas perform in their dwelling environments.

2.2.5 Organisation of Space

In urban design terms, the organisation of space refers to the creation of spatial compositions. This is a task of bringing together different forms and shapes into a cohesive design structure. Here, the elements of architectural form, such as Shape, size, scale, proportion, rhythm, articulation, texture, colour, and light, come into play. However, informal spaces are not envisioned at first place as the formal ones. Their spatial structure and organisation originate from self-organisation phenomena, which, according to Jerab (2025) refers to a process where some form of overall order arises from local interactions between parts of an initially disordered system. The spatial structure of informal settlements is shaped by self-interested individuals who are not intentionally creating order through planning. However, informal urban spaces can also result from a bottom-up organisation based on interaction and negotiation between different decision-makers state and non-state actors —whose actions are enabled and constrained within a socio-spatial context (Chatterjee, 2016) According to Lefebvre (1991), informal urban spaces are *not organised* by any technocrat; instead, they are *produced*. In associating the idea of self-organisation and emergence of informal settlements, Ahmed, (2020) asserts that:

“Informal settlements emerge and grow through generative processes of self-organisation and incremental adaptation. They are characterised by heterogeneity, flexibility and the flow of spaces for specialised and temporary uses, and by the diversity of housing in terms of size, architecture and construction materials. Their social qualities include the social and economic mix of residents, a rich network of social interactions among residents and a high social capital (Ahmed, 2020)”

The organisation of space in informal settlements is also a constantly changing activity. The ever-changing nature of land access activities drives spatial changes in informal settlements. Space can also be created formally or informally, as the informal processes and their corresponding spaces exhibit diverse characteristics (Table 2:1). In the formal approach, the developer starts by acquiring ownership of the land, followed by setting up infrastructure, constructing a house, and eventually moving onto the land and residing in the building. Conversely, in the informal approach, the sequence is opposite to the formal process. While formal and informal approaches may appear equal and opposite, the simplicity of the formal process lies in its definition, universality, and linearity, unlike the informal process, which is localised, unique, diverse, flexible, communal, and nonlinear, resulting in undefined informal

spatial dynamics. Figure 2:2 summarises the comparative understanding of the formal and informal means of production of space. However, this study believes that even the representation of steps comprising the informal process is unpredictable. One can start at any point and end up with a finished product, such as a dwelling unit, as the processes and their associated spaces are complex.

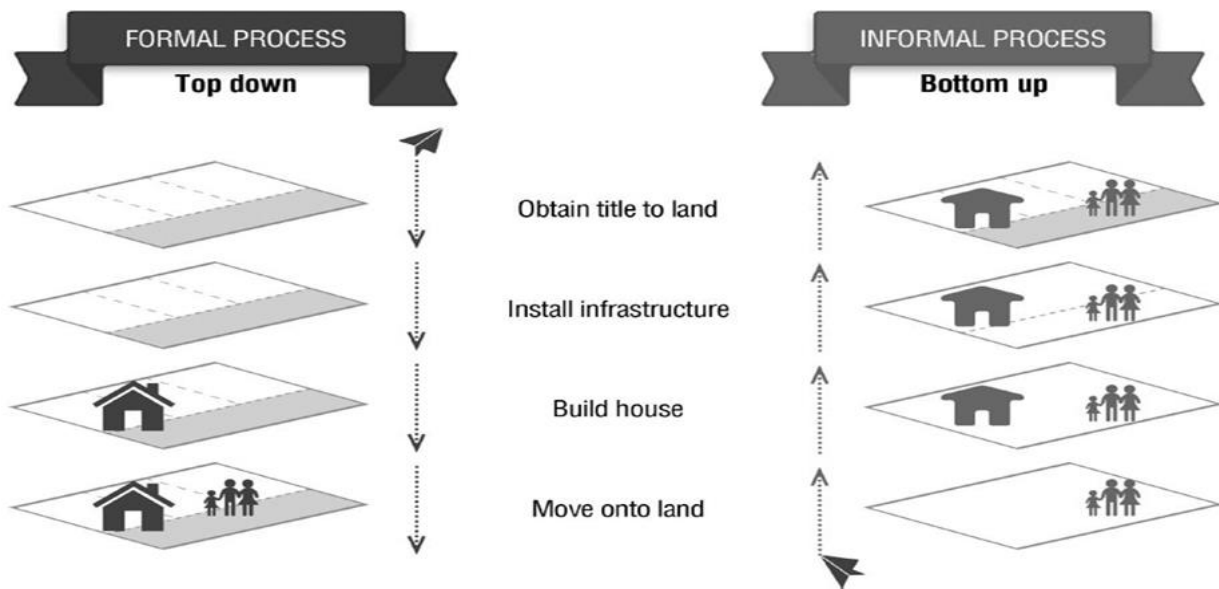


Figure 2:2. The formal versus informal processes of production of space
Source: (NUSP, 2015)

This research focuses on the space where individuals navigate, reside, and conceptualise. The initial phases of transitioning to land and constructing a house were viewed as a starting point in researching the spatial aspects of informal dwelling space creation. Cobbinah (2023) states that households' choices regarding residence and employment locations can affect the city's spatial development. Nonetheless, scholars tend to oversimplify informal land access systems by assuming they share universal characteristics and occur in similar social, economic, and cultural contexts. Analysts who suggest that informal land tenure lacks security for residents may overlook the fact that informal urbanisation is now prevalent and dominant in certain developing nations. Informal land transactions, validated by informal sales agreements, extra-legal contracts, and local leaders confirming land ownership, can offer different perspectives on the security of land tenure.

Table 2.1. Differences between the formal and informal settlements

Aspect	Informal settlements	Formal settlements
Access to land	Ease of entry - low entry costs	Difficulty of entry - High entry costs
	Land acts as a significant employment and wealth-creation centre ¹¹ (Pojani, 2019)	Work areas are separated from living ones
	Informal land allocation according to need	Fixed land use planning and allocation standards
	Unregulated and competitive markets	Controlled markets
	The socially regulated land delivery mechanism	Land delivery mechanisms based on 'paper plans.'
	Unserviced land subdivided at will and sold	Shortage of surveyed and serviced land
Origin and consolidation	Emerge and grow through processes of self-organisation and incremental adaptation.	Conceived by planning authority officials
Public space	There are no symbolic public spaces (Pojani, 2019).	Contain representational public spaces (Pojani, 2019)
Planning rules	Construction is evolutionary, with no need to comply with formalities such as drafts, permits, and approvals (Pojani, 2019)	Conventional building regulations control developments (Abebe, 2016)
Construction time	Not limited	Based on conventional urban planning regulations
Settlement location	Location is determined by land affordability, access methods, and connectivity.	Planned by planning authority officials
Settlement density	No regulation of density	Regulation of density
Architecture and symbolism	Heterogeneity, flexibility and flow of spaces for temporal uses	The rigidity of spaces controlled by formal regulations
	Diversity of housing size, architecture	Depending on conventional regulations
Construction materials	Locally available materials	Imported materials (Abebe, 2016)
Construction technology	Labour-intensive and adapted technology/ Skills acquired outside the formal system.	Capital-intensive and imported technology/Formally acquired skills
Dwellers	High social capital (Abebe, 2016)	Low social capital (Abebe, 2016)
	The rich network of social interactions and the economic mix of residents	Weak network of social interaction and economic mix of residents
Land ownership system	Many independent owners	Communal ownership (Cozzolino, 2020)
Land use	Multiple uses that change with time	A mono-functional or a limited number of functions (Cozzolino, 2020)

Source: Author, 2023

Nowadays, informal dynamics are very valuable in adding complexity.¹² To the processes of production of space which is valuable in production of the lively, enjoyable, walkable, healthy, and vital neighbourhoods (Boeing, 2018). The diversity and flexibility of the processes, in terms of actors involved in the production of such urban space, the flexibility of the rules

¹¹ The poor residents not only live in these settlements but also depend on activities within the settlements for their livelihood (Pojani, 2019)

¹² Complexity refers to the higher-order phenomena arising from a system's many connected, interacting subcomponents and describes both dynamics (i.e., processes) and structure (i.e., patterns and configurations) (Batty 2005 in Boeing, 2018).

engaged, and the diversity of tools engaged in the production, such as ideas, contribute to the emergence of complex urban spaces. For example, according to Salingaros (2021), nature and approach in the design of urban spaces have a significant influence on achieving the complexity of urban spaces. He further argues that, instead of exclusively designing in the architectural office under the influence of intellectualised design preconceptions, there is greater human benefit when the process is derived directly on-site. Salingaros (2021) adds that forms and spaces that typically arise in spontaneous building tend to be much more adaptive to human physiological and psychological needs.

2.2.6 Urban Form in Humanistic Perspective

The term "urban form" generally refers to the physical attributes of built-up areas, such as the size, shape, density, and arrangement of settlements (Shukla, 2023; Williams, 2014; Živković, 2020). Depending on what a researcher wishes to investigate, there are various ways to interpret the idea of urban form. Some people might consider a city's aesthetics to be its most significant feature. Others might focus on a city's ability to accommodate a specific type of business. In contrast, others might give more weight to how well it satisfies the social, cultural, or economic needs of daily life (Çubukçu, 2019). Other academics have made the bold decision to investigate the resilience features of urban form. This study joins the body of research that links the built environment's physical attributes to its users by examining how urban forms support their socio-economic lives. According to these scholars, the urban form is a meaningful register of the various movements (personal, familial, and communal) that have shaped it rather than just a neutral container for social life (Purcell, 2014). Among these is Kevin Lynch, who views urban form as the sum of the connections between the city's social activities and its material space. Social activities and structures work together to create urban form (Ngers et al., 2016). The humanistic perspective has provided a framework for comprehending the inclusiveness and adaptability of urban forms. The Inclusive City serves as an example of how cities can be planned to accommodate the social, cultural, economic, and physical needs of individuals of all income levels, social classes, and abilities (World Bank, 2015). By actively participating, residents can modify their surroundings to suit their needs (Zhao and associates, 2023). The idea of adaptive urban form, which typically enables its users to alter the built environment's physical features in accordance with their changing needs, is also introduced by the humanistic perspective (Cozzolino, 2020).

It is becoming increasingly important to understand resilient urban forms. The ability of urban forms to withstand, adjust to, or co-evolve under erratic conditions and meet needs distinct from those for which they were initially intended is essential to the survival of cities as they expand in size and complexity. As socio-ecological systems, cities are subject to various stressors, including resource depletion and population growth. Natural disasters and human activity are now seen as unpredictable and erratic threats to urban areas. Cities must be able to respond quickly and effectively to foresee and minimise associated risks and consequences. Accordingly, new strategies such as resilience are being sought to combat these unavoidable dangers. Through adaptation and flexibility, resilience offers rapid solutions for uncertainties and vulnerabilities (Ercoşkun & Oğuz, 2021b). Resilience strategies are implemented in response to the growing frequency and severity of natural, social, and economic challenges (Masik & Grabkowska, 2020). For urban planners and designers, incorporating the concept of resilience into their work is becoming increasingly important (Shukla, 2023). These days, spatial planners struggle with how to handle uncertainty in their day-to-day work using resilience-based adaptive urban planning and design (Cozzolino, 2020; Eldesoky & Abdeldayem, 2023; Rauws, 2017; Sharifi et al., 2017). Scholars are also increasingly studying the resilience of urban forms particularly focusing on examining the importance of resilient urban forms and their creation (Feliciotti et al. Sharifi et al. (2018). Resilience scholars including Sharifi and Yamagata (2018), have defined resilience as a system embedded in a network of interrelated spatial and socio-ecological systems with changing spatiotemporal dynamics and shifting environmental and socio-economic conditions that impact its functionality, integrity, and habitability.

Informality, which is growing rapidly worldwide, is leading to the emergence of urban forms that scholars agree are usually socio-economically resilient, as both informality and resilience share standard features and are seen as solutions and survival strategies¹³. Even though informal settlements may appear marginalised and disorganised at first, a closer look at their circumstances shows that they can be highly resilient and adaptable. A distinct set of guidelines, known as "defined" and "understood" rules, governs the informal production of space (Suhartini & Jones, 2020). While understood rules are implicit and possibly ambiguous and manifest in residents' physical adaptations to their homes, defined rules are explicit and communicate acceptable behaviours (Suhartini & Jones, 2020).

¹³ <https://www.urbanagendaplatform.org/best-practice/effects-urban-planning-and-design-regualtions-resilience>

Resilience thinking helps link the spatial dynamics that lead to different urban forms to the vulnerabilities of urban systems (Cruz et al., 2013). From the informal processes of producing space, urban form arises from a bottom-up organisation based on interaction and negotiation among different decision-makers: state and non-state actors whose actions are enabled and constrained within a socio-spatial context (Chatterjee, 2018). De facto transfers of land rights, piecemeal land subdivisions, sharing of space usage, negotiations of transactions and dwelling construction activities, variations, non-timely, incremental, spontaneous, and adaptive dwelling construction activities, and the unrestricted use of spaces are examples of dynamic situations that typically characterise the processes. These features allow the unofficial developers to adjust to shifting circumstances while creating spaces. For instance, residents adjust by sharing their space when living expenses rise, selling off a portion of their land parcels when they run out of money, which causes the settlement to gradually densify, and building gradually over an extended period of time when their income is unsustainable. This is what Revell (2010) says:

“If cities were (un) planned to grow in the same organic fashion as informality, then they would grow to be more responsive to the needs of the people and the changing parameters of society, as they stand, at the moment in time. Needs are dynamic, so cities must be dynamic as well. A dynamic, organically evolving, rapidly metabolising city would be able to adapt quickly, which would be agile and flexible” (Revell, 2010).

These dynamic characteristics make informal settlements resilient by enabling natural development and organic growth, which, in turn, provides the community with resilience. The resilience characteristics of informal settlements are manifested in the processes of their creation and consolidation. Informal settlements emerge and grow through generative processes of self-organisation and gradual adaptation. They are characterised by heterogeneity, flexibility and fluidity of spaces intended for special and temporary use, diversity of housing and in terms of size, architecture and building materials. Their social characteristics include the social and economic mix of residents, social interaction between residents and high social capital (Ahmed, 2020). The elements of informal urban form, such as the plots, buildings, and streets/ circulation paths, adjust to new requirements and foster innovation (Felicetti et al., 2018). This study considers urban form as the built environment’s physical characteristics such as plots, buildings, and streets that respond to changing socio-economic realities of its users. It believes that socio-economic activities and influences can change the physical characteristics of the built environment in question.

2.2.7 Resilience in Urban Form

One must first grasp the concept of resilience to comprehend urban form as a resilient entity. To address the urgent issues posed by climate change, rapid urbanisation, and socio-economic disruptions, resilience has become a crucial focus in architecture (Mouhcine, 2025). Resilience is defined as "a measure of the persistence of systems and their ability to absorb change and disturbance and still maintain the same relationships between populations or state variables" (Peters, 2021). Either an equilibrium or evolutionary perspective can be used to understand resilience (Ercoskun & Oğuz, 2021b). According to the equilibrium theory, a system can adjust or absorb shocks and disturbances without changing (Ercoskun & Oğuz, 2021b). The evolutionary approach places more emphasis on processes of adaptation, reform, and transformation than the equilibrium-based approach does on a return to the status quo.

Connectivity, diversity, redundancy, modularity and efficiency are at their highest in resilient urban forms (Sharifi, 2019; Leulmi et al., 2023; Alaweh, 2022; Ribeiro & Gonçalves, 2019). According to Leulmi et al., (2023), connectivity is the ability to communicate efficiently within and between systems. Permeability and interconnection are terms used in urban design to describe the extent to which urban forms allow (or prohibit) the movement of people or vehicles in different directions. Apart from offering improved redundancy, which maintains operational connectivity after a breakdown, the multitude of connections protects the city from isolated breakdowns. Although resilience requires redundancies, it also requires efficiency (Nel et al., 2019). According to Anderies (2014), redundancy is the absence of spare capacity in urban assets protected against the threat of attack. Alternative urban forms that support each other form an additional urban form that allows space and people to organise themselves or reorganise as needed (Felicciotti et al., 2016). Such spaces include open spaces, street edges, green areas and areas designated as sanctuaries. In addition to serving as parks or playgrounds attracting shops, recreational activities and pedestrians during business hours, open spaces can also serve as a temporary evacuation site or a refuge in case of emergency, such as fire or flood, and thus increase the socio-economic resilience of urban areas (Sharifi, 2019). Although resilience requires redundancies, it also requires efficiency as over-connectivity is also undesirable because it leads to inefficiencies such as too many roads, requiring too much space and maintenance (Nel et al., 2019).

Efficiency is the capacity of any system to accomplish the intended outcome without wasting time or resources. Maintaining the function of static urban form in relation to dynamic processes is what it means for urban form (Alawneh, 2022). A few significant elements that support one another are frequently combined with a large number of small, flexible elements to create efficient urban forms (Wood, 2016). The presence of urban areas with diverse land uses and activities that support a lively social and cultural environment is known as urban diversity (Yoshimura et al., 2022). Through physical design, the expansion of the public realm, user mixes, and demographic mixes, diversity enables urban forms to have multiple stability in geometry and use as well as coping capacity (Feliciotti et al., 2016). Small lots with straightforward geometry make things more accessible and connected, particularly at the neighbourhood level. However, to create diversity, they must be combined with large lots to accommodate investors who need more space to run their businesses. Various layers within urban nuclei, including natural areas, mixed-use corridors, green spaces, and dense activity areas, are used to measure modularity (Alawneh, 2022). The ability to accommodate a wide range of variations is essential to modular architectural design. The modules can function as standalone systems or as parts of a bigger system. According to Feliciotti et al. (2016), they are made up of appropriate elements that are independent in both geometry and functionality (Feliciotti et al., 2016). The block's redundancy capacity and efficiency are increased by vacant spaces (Alawneh, 2022).

Further, as part of the conversation about urban resilience in urban design and architecture, Bentley et.al. (1985) posit that any built environment needs to be responsive, which means it should be able to give its users a largely democratic environment, enhancing their opportunities by giving them as many options as possible. These settings are distinguished by their richness, variety, robustness, permeability, legibility, visual appropriateness, and personalisation. According to Bentley et al. (1985), Variety refers to a location's ability to accommodate a range of uses, thereby producing a variety of building types and forms. The ability of a built environment to allow for simple movement between locations is known as permeability. It is associated with the ability to move and the possibility of interacting in urban areas, and it highlights the ease of movement and the variety of routes between two points (Pafka & Dovey, 2017). Physical characteristics like smaller lots (narrow front) that offer several access points, shorter distances between property lines and building façades facing the street, and fewer blank walls facing the streets, as well as non-physical characteristics like the presence of stores and

other establishments that create active frontages, can all help to achieve permeability (Sharifi, 2019). According to Bentley et al. (1985), private users should regulate the permeability between the public and private interfaces, rather than the architect prioritising the protection of individual privacy by erecting structural and aesthetic barriers. Designers can provide tangible avenues for social interaction while letting the inhabitants decide how much permeability they desire. Bentley, I. (1985) goes on to say that visual appropriateness is the capacity to add diversity to sensory perceptions; personalization is the attribute that allows people to modify their environment; and robustness is the capacity of a space to serve several purposes without being restricted to just one. In 1960, Kevin Lynch (*The Image of the City*) coined the term "legibility," which refers to the capacity to make a space easy to read.

Smith & Davis, (2013), expanded further on the definition of urban resilience by categorizing the main metrics into four aspects: Physical, Environmental, Social, and Economic. In the realm of physical space, a resilient city design is seen as one that can adapt, transform, expand, or upgrade in order to promote and improve functionality in financially viable ways. Its structures have the adaptability to make minor adjustments in space layout, enabling changes in purpose and facilitating small additions and expansions. A resilient urban form in the Environmental dimension is permeable and easily reached from various locations, including publicly accessible green open spaces for recreation and urban biodiversity promotion. In the Social aspect, a resilient city layout may focus on various land uses and different types of tenure to enable the sharing of resources and amenities. Various purposes can enhance safety and liveliness, and guarantee a continuous presence in the public space all day long. They also help boost local economies by generating opportunities for various activities to encourage and inspire each other. Diversity in tenure also includes a variety of housing options suitable for various individuals, including young families and individuals of different income levels. Social shocks involve problems like poverty, disasters, cultural erosion, economic insecurity, and family-level safety measures (Altun & Tezer, 2019). In terms of property values over time, resilient urban form is taken into consideration in the Economic dimension. The local real estate market can indicate features of the urban layout like density, land use, and access to public spaces, influencing decisions of developers and buyers (Smith & Davis, 2013).

The consequences of economic shocks include unemployment or a decrease in income (Rahman et al., 2021). Additionally, as stated by Smith & Davis (2013), the resilience of urban form also relies on ongoing governance relationships. The unique characteristics of governance

when urban places were established can significantly impact the enduring resilience of urban structure. Simultaneously, altering forms and methods of governing can impact resilience in the long run. Different types of ownership are characterized by distinct rights and responsibilities that are evident in urban design, such as the availability of open space and the structure of the city. Planning and its related development regulations help encourage or limit the progress of resilience building over time by influencing the ability of communities to adjust. This research focuses on the ability of urban structures to adapt to formal systems after being influenced by informal spatial dynamics in the Evolutionary approach. The essential features of the desired resilient urban form include diversity, flexibility, and self-organisation. The research utilizes the physical, Environmental, Social, and Economic dimensions to explore various factors affecting the resilience of the urban structure in the area under investigation.

Resilient urban form can be studied, organized, or evaluated through different scales such as macro, meso, and micro-scales. At macro-scale, urban form addresses the overall makeup of the city, its current location, and its anticipated growth compared to other cities and settlements within the larger network of cities and city regions. At the meso-scale level, urban form pertains to the overall layout of neighborhoods and districts. Important factors to take into account include the layout and design of neighborhoods, the variety of residents, the types of transportation available, proximity to services, and the dimensions and layout of parks and natural areas. On a micro-scale, city design refers to the layout of buildings, their placement in relation to each other, and their proximity to sidewalks and roads in more detail. The plots, open spaces, buildings, and streets become the main variables in developing and analyzing a resilient urban form (Shariffi & Yamagata 2018). This study, analysed urban form at a micro-scale level as the informal production of space is mainly a bottom – up activity initiated by individuals at plot level, to dwelling compound to settlement level.

Further, to facilitate analyses of resilient urban forms, Sharifi (2019) presented a conceptual framework for evaluating the resilience of urban forms (Figure 2:3). According to Sharifi (2019) conceptual framework, the examination of resilience should address four critical queries: "What is being resilient to? What challenges are being resilient to? At what point does resilience occur? And what is the purpose of resilience?" This study adopted this framework. Based on this framework by Sharifi (2019), the focus of this study on the aspect of urban form's resilience was seeking to know the urban form's resilience to socio – economic changes, to enhance the urban form's ability to offer life – support to its dwellers during its lifetime. The

answer to" *What is being resilient to?* was urban form; for *at what point does resilience occur?* was during the development of urban form; for *What challenges are being resilient to?* is socio – economic challenges; for to *what is the purpose of resilience?* “is to offer life – support to its dwellers.

Neighbourhood shape and design, Neighbourhood density, Land use mix, Lots, Blocks, and Open spaces

Resilience stages: Planning /Preparation, Absorption, Recovery, and Adaptation



Shocks and stressors: Natural, Environmental, Social, Economic, Technological, Attacks and Terrorism etc.

Resilience Characteristics: Robustness, stability, Redundancy, Diversity, Flexibility, Modularity, Self – organisation, Efficiency etc.

Figure 2:3. The conceptual framework for analysing the resilience of urban forms

Source: Adapted from Sharifi (2019)

2.2.8 Urban Complexity

In order to gain a sufficient comprehension of the reality of informal spatial dynamics adaptation and its effects on urban form, it is recommended that the informal process of space production including adaptation of the informal spatial dynamics be viewed as a complex system (Wrigley, 2019). Tagliacozzo et al., (2023) defines a system as a collection of objects that exhibit regular interaction or interdependence to form a cohesive whole. Systems include things like a football team, a family, a marriage, and an ant colony. When agents interact in complex systems, emergent outcomes result that are frequently impossible to predict based only on the interactions between the agents. Suppose you were tossing a rock. It will largely depend on your strength, aim, and coordination where the rock ends up. You could tell with ease where the rock would fall. Now picture hurling a live bird. You cannot predict with certainty where it will end up (Schuster, 2005). The inclination to view an activity as a system is known as "systems thinking.". Team spirit, group culture, and working for an organization as a whole are examples of how it aids in understanding the system collectively. Systems thinking views the whole as a result of the interactions between its components rather than the sum of its parts. For example, in an *ant colony*, *each ant has a decision role and locally interacts with the other ants. What emerges from their behaviour, is an ant colony. The individual ant is working with local information and local interaction. It has no sense of the global system. And you can't understand the system by looking at the behaviour of individual ants*¹⁴. In urban design and planning, urban systems can be considered as complex systems. According to Ochoa et al.,

¹⁴ <https://Hbr.Org> > 2011/09 (Sullivan, 2011)

(2025), Complex systems share several fundamental characteristics, which challenge conventional scientific inquiry. These characteristics encompass non-linearity, self-organisation, emergence, adaptive, and sensitivity to initial conditions. They are non – liner as several of its components interact non-linearly to produce emergent behaviors that are impossible to comprehend by looking at individual components separately. Nonlinear systems are such as housing development, population epidemiologies and employment markets. Self-Organization denotes how systems order themselves without any kind of observable or intentional top-down control (Jerab, 2025; Sengupta, 2019). Self-organisation can be observed in phenomena such as informal settlements. According to Sengupta (2019), Emergence is a process in which smaller entities, components and patterns in a system interact with each other, resulting in the formation of larger entities or behaviours not observable at the initial scale. Within urban phenomena this is observable in bottom-up initiatives leading the development of wider policy, traffic jams resulting from the incremental actions of multiple drivers or the transformation of urban enclaves from one identifiable function to another e.g. a shopping area to an office area (Jerab, 2025). Adaptation refer to the ability of complex adaptive systems to change their behaviors as a result of experiences. Adaptive strategies improve the resilience and sustainability of the system's performance in constantly changing circumstances. According to Taghinezhad, (2018), sensitivity to initial conditions means that, a small change in the initial conditions may lead to a dramatic change in the long term behavior of a system. Urban systems are Complex Adaptive Systems (CAS). CAS are a particular category of complex systems incorporating additional phenomena of particular importance in real world systems. They exhibit the ability to learn from information collected through experience termed as adaptation (Sengupta, 2019). In this study, the informal processes of space production are regarded as a Complex Adaptive Systems (CAS) as the processed are not initiated or controlled by any agent and the results of such processes are unpredictable as they respond to changing socio – economic factors.

2.2.9 Adaptation in Production of Space

Adaptation is when someone or something changes in order to better fit their surroundings, or the characteristic that develops as a result of this change. The action of altering something to adapt it to a different use or circumstance. In the context of urban planning and design, spaces have the ability to adjust to varying conditions and requirements (Yiannoudes, 2016). Adaptation may be deliberate or spontaneous. Planned adaptations are intentional policy choices made by public agencies, while autonomous adaptations are actions that private actors perform spontaneously without public agencies' involvement (Khanal et al., 2015). Self-

directed changes could involve activities like separating and enlarging current spaces, installing an additional level and balcony, transforming attic areas, and incorporating windows and both interior and exterior staircases to address evolving socio-economic conditions encountered by builders (Kamalipour, 2016). In Figure 2:4, an instance of autonomous adaptation is depicted where space users formed a desire path. Figure 2:5 provides an illustration of how local authorities exert control by obstructing the desired path of space users. Figure 2:6 displays a planned adjustment made by local authorities to cover the desire lines formed by space users.



Figure 2:4. The Desire lines created
Source: www.pleated-jeans.com¹⁵



Figure 2:5. Control by blocking desire lines
Source: Novikov, 2014.



Figure 2:6. Adapting the Desire lines by paving
Source: www.pleated-jeans.com

Adaptation of informal spatial dynamics refer to intended modifications can be carried out by disregarding the informal dynamics; incorporating informality “without sacrificing its authenticity” through strategies like temporary legalizations and formalization with certain limitations; and developing planning systems to engage with informality and from that engagement derive insights on enhancing planning regulations as they foster an enhancement of informal interventions (Silva, 2018). At times, formal organizations switch between following formal and informal protocols - adhering to formal rules when it benefits them, and bending the rules informally when it does not (Chiodelli & Tzfadia, 2016). This research focuses on adapting informal spatial dynamics by incorporating certain informal practices in space creation.

Adaptation of the informal spatial dynamics is normally considered to complement the weakness of the extreme formal or informal systems of production of space as according to Mehaffy & Haas (2018), a completely ordered or completely chaotic system is not very valuable because it cannot evolve very far and cannot improve or progress. Urban planners and designers

¹⁵ <https://pleated-jeans.com/2023/10/13/cool-desire-path-examples>

are therefore urged to focus their efforts on carrying out adaptations to strengthen the adaptive capacity of cities and enable them to function well under different circumstances, being responsive to both foreseen and unforeseen opportunities and threats (Boeing, 2018; Rauws, 2017). While formal development is a process with long planning periods and thus the built landscape appears static, informal or spontaneous settlements seem to be subject to high dynamics in their ever-unfinished urban form (Kraff et al., 2020). Adaptive neighbourhoods combine the formal and informal characteristics that are stasis and dynamism. They are those who can adjust to new conditions, learn from experience, and have the capacity to be modified for new purposes. In this study, the term ‘adaptation’ is used as a transitive verb. It considers adaptation as the act of changing something to make it suitable for a new purpose or situation. This ranges from allowing the informal processes of production of urban space together with their associated spaces to co-exist with their formal counterpart and interact beneficially within a common urban fabric and institutional frameworks. Adaptation attempts referred to in this study are planned and autonomous adaptations done by Governments particularly the government of Tanzania. Further, ‘adaptation’ is considered a complex system which involves both the planned and unplanned self – organising activities. Some activities like settlement regularization are planned but difficult to forecast their final results while others like the toleration of informal activities are unplanned activities as no one initiates, leads, guides or controls them. In adaptation, various stakeholders (agents) interact in a variety of ways to achieve the adaptation goals and outcomes like adaptation to achieve inclusive and adaptive urban forms.

Adaptation of informal spatial dynamics is challenging as formality and informality are incompatible. Failure to strike a balance between the formal and informal contributions in adaptation can result in the collapse of either or both sides as they rely on each other (Mueller, 2015). For instance, mixed land uses receive praise for providing benefits such as a variety of housing options and density, fostering a harmonious economic mix of land uses, compact growth, enhanced neighborhood identity, walkability, and job creation. Nevertheless, excessive mixing of various land uses can result in negative consequences such as traffic congestion, encroachments, high-density housing, parking issues, non-residential activities in residential areas, reduced tax revenue, disorder, noise, and strained infrastructure (Raman & Roy, 2019). According to Yoo et al (2017), combining a grid system with an organic form enhances the significance of the organic form itself. Nonetheless, a balance is required to prevent the fusion

of organic and grid design from creating a disorderly structure. NUSP, (2015) pointed out that when incremental constructions are poorly managed, the designs suffer, affecting orientation, safety, and health, and resulting in the use of low-quality materials. Uneven development of road infrastructure leads to increased housing rents and land prices, making peri-urban communities desirable for real estate developers (Khanani et al., 2021). Formalisation improves tenure security but can also expose informal residents to eviction, gentrification, increased land prices, and the creation of gated communities (John et al., 2020; Lupala & Bhayo, 2014; McCartney & Krishnamurthy, 2018; Owusu, 2021). Additionally, Boeing (2018) suggests that overly simplified actions within an informal system can hinder important social processes and impact their ability to adapt and bounce back (Boeing, 2018; Fitchett, 2014). Dovey (2012) provides additional instances of oversimplified interventions accountable.

“As land rent increases so does the pressure to displace informal urban practices; As informal settlements are demolished displaced residents emerge elsewhere (Durand-Lasserve 2006); as informal settlers are granted formal tenure, they may adapt by selling and moving to another informal settlement. If street hawkers are moved along or organised into formalised trading zones they may emerge in another part of the network. As increased traffic renders sidewalk trading and social exchange impossible, the trading and the exchange adapts” (Dovey, 2012)

To overcome the challenge of oversimplified interventions some scholars such as Dovey (2012) suggest that any newly formalised codes that emerge need to sustain the productivity, amenity and sociality like the norms and values of space production that are already embodied in the place. Striking a balance between informality and formality is crucial to avoid chaos. The formal/informal continuum calls for a balance between order and chaos to achieve the urban spaces and processes that lie within the ‘creative zone’ (Figure 2:7) as failure to do so leads to the collapse of either formal, informal or both sides as the two depend on each other (Mueller, 2015).

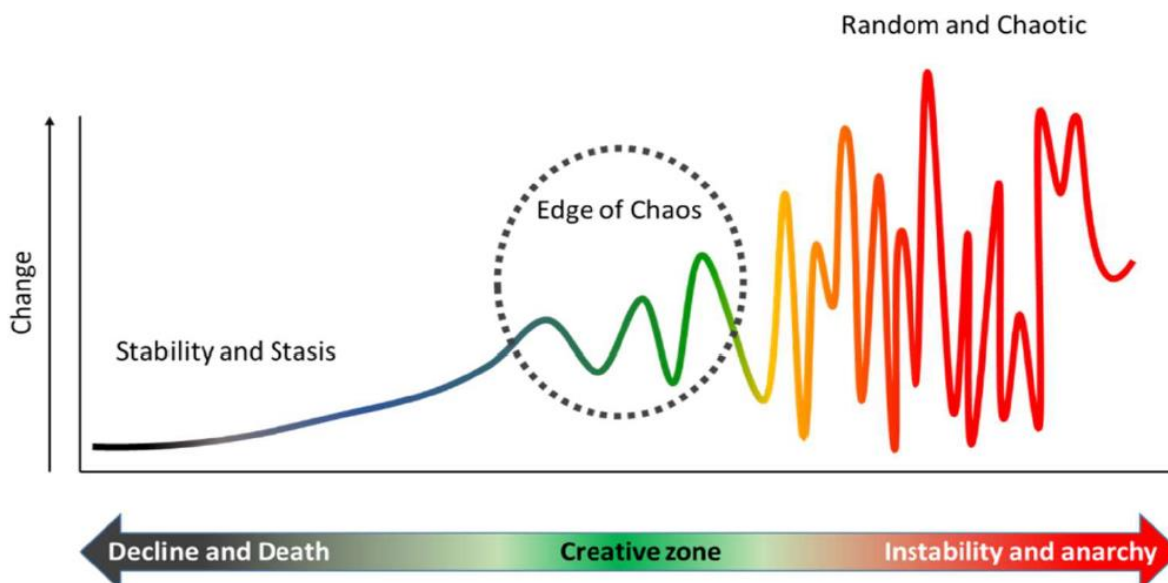


Figure 2:7. Complex systems located in the region between order and chaos
Source: Boeing (2018)

To successfully adapt the informal spatial dynamics, it is advised to strike a balance between formal and informal sides which are normally incompatible. The formal side is anchored on stasis, formality¹⁶ and architecture of neat, ordered and highly controlled mono-functionally zoned spaces conflicting with the informal processes which are characterized by flexibility, responsiveness¹⁷ and architecture of open-endedness (loose-fit and open plans) and unfinished designs (Ahmed, 2020). The adaptation of the informal spatial dynamics can be done in various ways. Silva (2018) states that in some situations, planning regulations and procedures fail to consider informal dynamics, while in other cases, they incorporate informality through "planning games" without compromising their integrity. Additionally, in a third scenario, planning systems engage with informality and use this interaction as a tool for enhancing planning rules and enhancing informal interventions. In conclusion, Chiodelli & Tzfadia (2016) presented a model known as the 'four-lane two-direction road' to illustrate the formal and informal interaction thesis (Figure 2:8). The initial path in the model leads from formal/informal space to formal institutions. It is assumed that power operates in various directions; therefore, the creation of space influences formal institutions as well (rather than just the other way around, as is sometimes thought). The initial lane discusses how informal space impacts the decisions and actions of formal institutions. The second lane ('considers') looks at the

¹⁶ Formality can be defined as the rigid observance of rules or conventions, stiffness of behaviour or style, something that is done simply to comply with requirements, regulations, and customs.... (Ahmed, 2020)

¹⁷ This is a built environment that provides its users with an essentially democratic setting and enriches their opportunities by maximising the degree of choice available to them by enhancing their permeability, variety, legibility, robustness, visual appropriateness, richness and personalisation (Bentley, et.al, 2005).

connection between official (planning and construction) regulations and their violation. The second pathway extends from official institutions to formal and informal areas, showcasing the authority of sovereign, professional institutions and legal systems in creating both formal and informal spaces. The primary lane indicates that formal institutions play a role in defining legal and formal land use. Urban planning, influenced by legal regulations, is enabled by the process of the law (Chiodelli & Tzfadia, 2016). The second lane in the second direction indicates the actual anticipated land use expectations, which can be either formal or informal based on master planning. This lane maintains that formal institutions alternate between formal and informal behaviors – behaving formally when it benefits them to follow legal regulations, and behaving informally when it does not. Formal organizations use intentional methods, both formal and informal, to pursue their lawful or unlawful objectives. These methods consist of official actions, making informality legal, making formality illegal, laws in emergencies, navigating through different legal systems, and additional strategies (Chiodelli & Tzfadia, 2016).

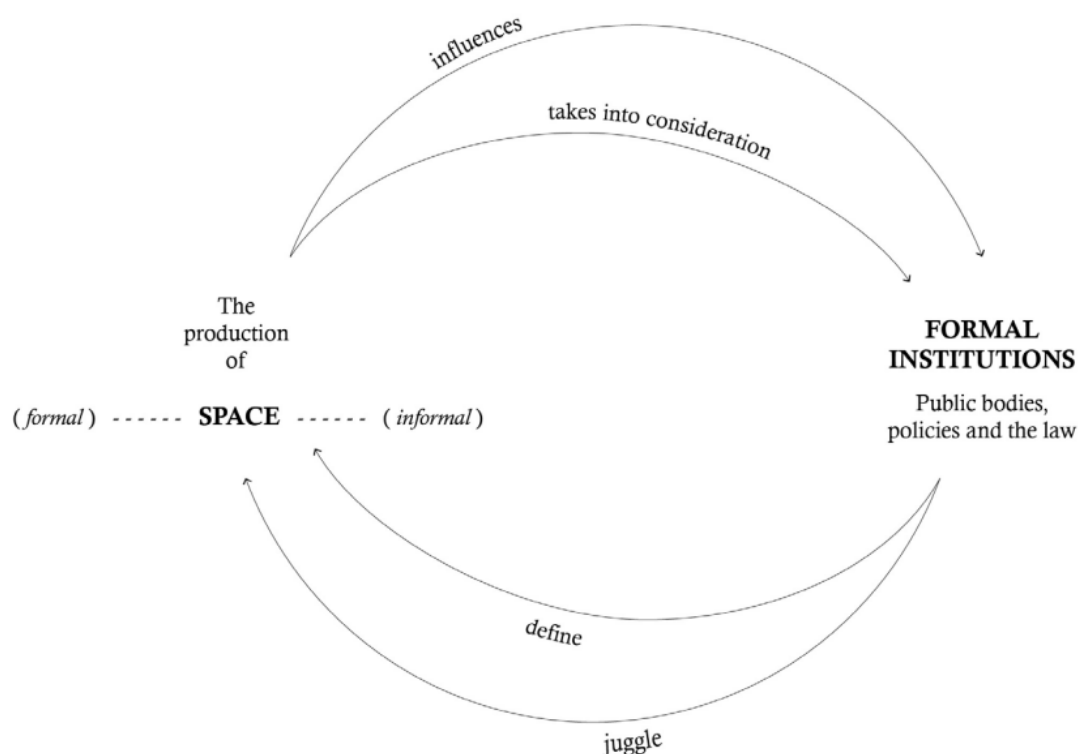


Figure 2:8. A four-lane two-direction road model
Source: Chiodelli & Tzfadia (2016)

2.2.10 Evaluation of Adaptation Attempts

One of the main focuses of this research is to assess the effects of adapting the informal spatial dynamics on urban form. This is a question about evaluating impacts, as defined by Rogers et al., (2025) as an assessment of how the intervention being evaluated influences outcomes, whether these effects are intentional or unintentional. According to Hulsbergen (2012),

evaluation in the context of urban regeneration is described as the post-implementation process of assessing the extent to which objectives have been reached, resources utilized, and outcomes generated. However, Hermawati and colleagues (2018) distinguish impact assessments from outcome assessments. As Hermawati et al. (2018) argue, the evaluation of outcomes refers to a defined and sometimes quantifiable alteration or direct consequence of the project or activity. The extent of a result will be predetermined and the range will be equally restricted, as impact assessment primarily focuses on the outcomes of interventions.

Evaluations can be done before, during and after program or policy intervention or implementation. Along this line, Hulsbergen, (2012) distinguishes three forms of evaluation namely; *ex-ante*, *andante* (or *ex durante*) and *ex-post*. *Ex-ante* means 'before', *andante* means 'during', 'quietly going, and where *ex-post* means 'after'. In spatial planning and design *Ex-ante* evaluation is done before the realization of an intervention or design. In that case, the actual effects cannot be measured. It pertains to a scheme or evaluation established to guarantee the intervention is appropriate and consistent, as well as to conduct an initial evaluation on the design and anticipated effects of the assessment.

The *Andante* evaluation, occurs during the execution of a plan or design in the form of (ongoing) monitoring, to follow what happens and bring to light the effects of actions and decisions. In this form, monitoring is in the first place following what happens, systematically collecting data and elaborating on these to interpret what happens in terms of aims, norms, values and expectations (Hulsbergen, 2012). *Ex-post* evaluation refers to fixing the value after a project is finished (Santos & Coad, 2023). With *ex-post* research, an activity, policy or design can be judged on the actual effects. *Ex-post* research outcomes are important to gain knowledge about the real consequences of the products of planning and design (Hulsbergen, 2012). After the intervention is completely carried out, data can be gathered on the intervention's results to assess how effective it was in achieving its intended objectives, while also taking into account any unforeseen or indirect impacts of the intervention (Santos & Coad, 2023).

Evaluations can be conducted without specific objectives or with specific objectives. GFE assess the value of an evaluand without considering its stated or implied goals, while goal-based evaluations assess based on the evaluand's achievement of its goals (Youker, 2011). Rauws (2017) gives an illustration of a situation in which assessments are unable to be carried out in accordance with the objectives of a project. Rauws (2017) argues that understanding the

adaptive behavior of cities from a complexity perspective cannot simply be reduced to a clear set of cause-effect relationships. Instead, the processes of adaptation are believed to result from the interplay of various factors driving change at different levels (Rauws, 2017). In this context, urban forms resulting from adaptation are typically evaluated based on their appearance and not on the objectives of the adaptation process. Rogers (2015) categorizes these impacts as unintentional, whereas others are connected to specific goals as intentional. In this study, an evaluation was done to know the impacts and outcomes of adapting the informal spatial dynamics on urban form. Evaluations were taken in places where the adaptation process specifically the toleration of informality was continuing to take place and also when the physical regularization had already taken place. In this regard, the ongoing and the ex-post evaluations were done to see the ongoing outcomes of tolerating the informal activities of production of space and those of settlements regularization projects on urban forms.

2.3 Global Evolution of Informal Spatial Dynamics Adaptation Attempts

Informal processes of production of space are not a new phenomenon in the world. The traditional village and the medieval cities had their urban morphologies produced informally by micro adaptation over time (Dovey, 2012). Adaptation of informal spatial dynamics was part of strategies for the production of urban form during the Medieval, Renaissance, and Baroque periods and in the early (tribal) settlements in Africa as discussed further in pages 54 to 56. The upgraded remnants of informal settlements gave rise to the medieval cores of numerous European cities. Urban layouts in this era typically did not adhere to structured designs, as seen in classical societies. They adjusted easily to the geographical, economic, and social conditions that influenced the creation of their physical structures (Taruza, 2016). In the 15th century, builders applied a formal classical order to the organic layout of medieval cities. The architects and planners of this era preferred uncomplicated shapes and clean designs. Therefore, open squares and linear streets with balanced designs and powerful lines were actually created from the crowded medieval city layout (Kashef & El-Shafie, 2020). In addition, in the Renaissance era, city designers did not completely eliminate the crowded medieval city layout that had evolved organically (Figure 2:9), instead they integrated grand squares and straight roads alongside the existing irregular streets (Kashef & El-Shafie, 2020).

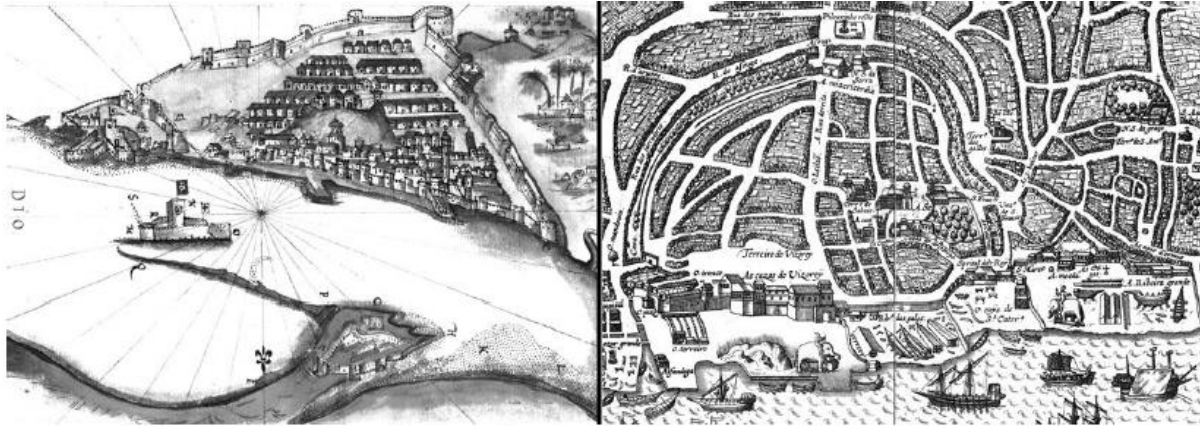


Figure 2:9. Portuguese overseas. Adapting and extending existing settlements
Source: Fagan & Scarre, 2015

Rapid informality saw a surge during Modernism in the 19th and early 20th centuries. Informality presented a significant obstacle to the modernist ideals that were based on stability. The modernist planners and architects explicitly stated in the Charter of Athens that informally developed spaces including settlements should be demolished without any delay. The charter expressed a low acceptance for informal or unclear aspects of urbanization (Mehaffy & Haas, 2018). During modernism, redevelopment projects included complete demolition and reconstruction led by planning officials who were disconnected from public inputs. In the 1970s, the oppressive “bulldozer” eviction policy that focused at eradication of informal settlements and re-housing of its people elsewhere, most likely in public housing began to show signs of failure. Many developing countries pursued this approach until research and the international experience started to provide evidence of the failures of these eradication policies, their deficiencies and the destructive effects they had on the urban poor. In general, Modernism undermined city life by not acknowledging distinctions (Kashef & El-Shafie, 2020). The Wendell O. Pruitt Homes and William Igoe Apartments, known together as Pruitt–Igoe, - the joint urban housing projects built between 1954-1955, first occupied in 1954 in the US city of St. Louis, Missouri, stand as an example of modernism failure. The project was abandoned and its buildings were demolished between 1971-1974 (Figure 2:10) due to its failure to consider social aspects of occupants. Due to its failures, Modernism faced strong criticisms both in terms of ideas and in physical confrontation (Fainstein & Novy, 2024). Jane Jacobs' 1961 publication, *‘The Death and Life of Great American Cities’*, provided a lengthy critique of modern urban planning that contributed to a shift in thinking from modernism to postmodernism.



Figure 2:10. Dynamite of Pruitt Igoe in 1971 – 1974

Source: Rossi, (2022)

During Postmodernism, the concept of informality gained traction in urban discussions as a counterpoint to the functionalist urban planning put forth by CIAM (Lutzoni, 2016). Postmodernism encourages doubt, adaptability and transformation. The production of space evolved from a technocrat-led, expert-driven process to one that incorporates relevant stakeholders and employs a community-participatory or bottom-up approach (WCR, 2016). The democratisation of planning in this era paved the way for the recognition of informal settlements as among the means of housing production. The investigation of informal dynamics became more effective in understanding urban phenomena beyond the conventional "methods of urban redevelopment and planning" which often overlooked the people's "real life" experiences (Jacobs 1961). In the 1980s, governments around the world started to gradually to encourage upgrading strategies to reduce the negative effects of eviction laws hence preserve the social bonds and communal unity that existed in the informal settlements. Emphasis was on integrating land and housing policies, including legalizing tenure, infrastructure improvements, and facilitating credit to enhance *self-help housing* and improve conditions in informal settlements (Khalifa, 2015). In Self – Help housing approach, the direct governmental involvement is drastically reduced and the households had a room to build houses that suit the occupants' changing needs and circumstances. The Self – help schemes were centered on the theory of "freedom to build" by Turner (1972) that advocated for giving a room to households to build houses that suit the occupants' changing needs and circumstances define the importance of homeowner empowerment (Kakwambi, 2021). During this period, the upgrading programs were combined to produce sites and services projects where full tenure of land lots was granted

to future residents. However, the impacts of sites and services on institutional and policy reform were minimal if non-existent and site and service projects never managed to be replicated or scaled up on a larger level (Bredenoord & van Lindert, 2010; Khalifa, 2015). For example, in cities with chronic housing shortages, these increased living standards began to lead to '*gentrification*'.

During the 1990s, methods of adjusting informal spatial dynamics were developed. The strategy used has shifted from simply addressing informal settlements to their integration into institutional reforms and city-level policies as summarised in Figure 2:11. The focus was on offering a package of social services, upgrading infrastructure and reorganising physical settlements, followed by regularisation of property rights and land ownership. Postmodernism sought to create a new social reality by emphasizing the dialectical relationship between formal and non-formal elements in a particular space (Lefebvre 1991). In the 2000s, the idea of upgrading gave way to the idea of integration. Measures have been taken to link the growth of the formal property market to informal urbanisation. According to Khalifa (2015), the integration of informal settlements involves both non-spatial elements such as social and cultural integration through legal frameworks and spatial elements such as infrastructure planning and upgrading. Cities like Medellin stand as successfully examples that demonstrated integration, showing that flexible and adaptable approaches can yield positive results.

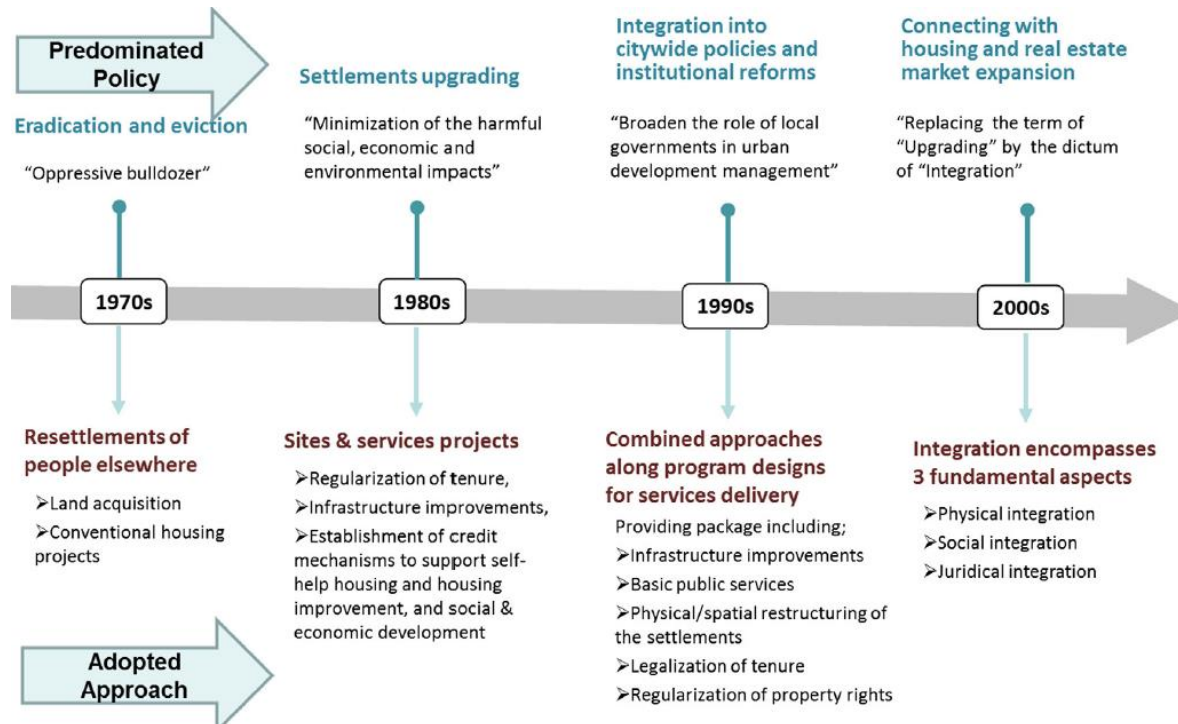


Figure 2:11. Timeline of changes in policy and upgrading ideology worldwide
Source: Khalifa (2015)

Critics have hindered the widespread acceptance of participatory planning by suggesting that it could stifle creativity and cater to the preferences of the most influential, leading to outcomes that do not align with the public's best interests. A planning movement from the late 20th century, known as new urbanism, smart growth, or neo-traditionalism, began to gain popularity with its different perspectives on suburban development. In October 2016, the "New Urban Agenda" was introduced, presenting a fresh framework agreement for urbanization policy and practice in the coming two decades (United Nations, 2017). The New Urban Agenda advocated for moving away from Western-centric urban models and towards a more flexible and inclusive approach that acknowledges the influence of planning and design on creating fairer cities (Mehaffy & Haas, 2018). The need for the innovation of a range of spatial types at different densities that enable high levels of internal adaptation, subletting and spatial trading whereby houses and enterprises expand and contract with changing circumstances were encouraged (Dovey 2011). Among the successful innovations was the ‘supports’ system developed by John Habraken, that involved three-dimensional serviced frameworks that require residential infill and the informal colonisation of the unfinished office tower known as the Tower of David in Caracas (Dovey 2011).

On governance of the adaptive spaces like the informal settlements, there emerged various approaches. Currently, the advancements in Information and Computer Technology (ICT) are

aimed at enhancing the quality of life for urban residents, with 'Smart cities' emerging as a viable solution for this purpose (Eremia et al., 2017). Among other things, artificial intelligence (AI) technologies are increasingly being used to solve economic, social, environmental and governance problems in cities. Artificial intelligence is set to become one of the main means for local governments to achieve smart and sustainable development (Son et al., 2023). For example, Chambers & Evans, 2020 show how the Internet Of Things (IoT) technology is deployed in informal urban settings in Nairobi, Kenya, to enhance the reliability of water and energy infrastructures. In the concern to achieve adaptive spaces, Varzeshi et al., (2024), reported the success of three projects, namely the Sydney Digital Twin, Land iQ and SIMPACT in Australia. These projects have been seen to improve the functionality of cities by integrating data in real time, predictive planning and adaptive infrastructure. Studies on the use of ICT in the development and management of urban resilience are also ongoing, among them by Mehan & Mostafa (2024), which carried out a study on the use of augmented and extended reality technologies in the Houston and Amsterdam metropolitan areas to achieve inclusive and equitable cities.

In African cities, urban centers evolved from traditional villages such as Ouagadougou in modern-day Burkina Faso, Ashanti Empire in present-day Ghana, Kano in Nigeria; as well as Djenne and Timbuktu in Mali; Kilwa and Zanzibar; and Great Zimbabwe in Southern Africa (UN-Habitat & Africa Planning Association, 2013). In the pre-colonial era, traditional leaders, families, and communities held land ownership and managed it using traditional customs. Access to land was connected to usage, focusing on agrarian practices, tribal villages, and large settlements. Space was produced, managed and governed according to traditional customs for communal living, with supervision from kings, chiefs, and other traditional authorities. Curved patterns of houses, roads, walls, and plazas were evident in African urban layouts (Figure 2:12). Houses were built in very close proximity to one another. The lanes and roads were extremely narrow and meandering. The limited width and rarity of small roads kept the flow from being disrupted too frequently. The narrow streets provided benefits such as social interaction, intimacy, cohesion, group control, youth education, noise reduction, particularly in peaceful residential areas with low-density family homes (Amankwah-Ayeh, 1996). The curved nature of the historic streets spreading out from the town center (Figure 2:13) continuously blocked long views but provided different views at every corner. Walls defined villages, controlled urban expansion, and offered mental and physical protection. During times of instability, they

provided security from theft or damage. During times of peace, they monitored who entered and left. The main square in the pre-colonial African city was located in front of the palace of the king or chief. Being the primary square, the main plaza hosted numerous public activities and played a crucial role in socializing in various pre-colonial African cities.

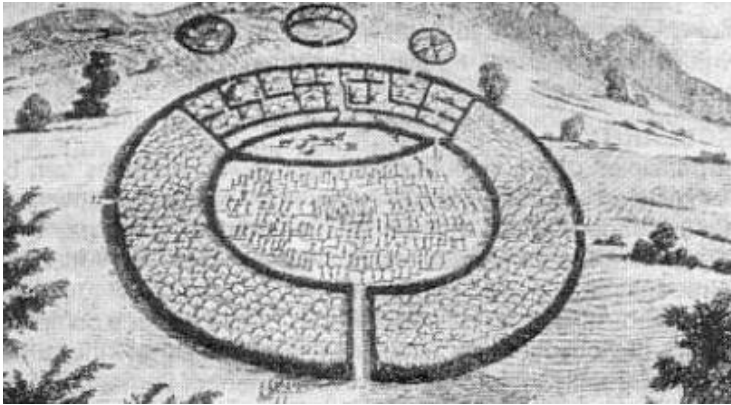


Figure 2:12. Dingane' royal elliptical Kraal
Source: Amankwah-Ayeh, 1996



Figure 2:13. Yoruba cities layout
Source: (Amankwah-Ayeh, 1996)

In the 19th century colonial period, the colonialists chose not to conform to traditional spaces and instead created new settlements apart from the traditional ones, which hindered the growth of these settlements (UN-Habitat & Africa Planning Association, 2013). A new city was constructed based on Western standards of aesthetics and zoning, located next to unorganized settlements, both recent and historical, dealing with the same issues as medieval European cities. Examples of African capitals include Nairobi, Kenya, and Salisbury, Harare. The Western traditional culture, with its square and rectangular spaces reflecting an authoritarian top-down hierarchy, is not African in origin and presents challenges for its use in Africa. Therefore, present-day urban Africa exhibits some of the negative attributes of Western urbanization. In the post-colonial era, Ghana became the initial African nation to achieve independence from colonial rulers in 1957, with the majority of other countries gaining independence in the 1960s. After achieving political independence, the new African governments made minimal efforts to alter the urban functions of the towns and cities that were passed down from colonial governments (Akatch, 1995). As a result, the planning activities in colonial Africa were influenced by Western planning institutions and had a diverse impact that included conflicting processes and policies, as noted by Jenkins et al (2007). Countries such as Tanzania tried to create their own development models, while others adopted rural modernization practices promoted by colonial powers and aid organizations. The colonial-era

planning systems and laws remained deeply rooted during the post-independence and current times.

The metropolitan nature of urbanism in East Africa has its roots in the 15th century, according to Frigerio (2016). Urban planning in Swahili areas thrived with a blend of Persian, Bantu, Arab, and Indian influences, along with European interventions, along the African shoreline near the Indian Ocean. In the pre-colonial era, Swahili towns were characterized by both planned and unplanned layouts. The Arab rulers (Sultans) planned and oversaw the development of the city, while the indigenous people were responsible for the growth of the unplanned city (Frigerio, 2016). By the end of the 19th century, under British rule, the approach towards governance in East African British colonies shifted from exploitation to integration. Colonial planning adopted the contemporary Universalist idea of combining progress with tradition, western universal templates, and culturally-focused understandings of African societies. The British town planning that was brought in was founded on garden city designs. Infrastructures were tasked with arranging functional and racial zoning. Examples of Ernst May's urban plans included Kampala (1947), Dar es Salaam, and Nairobi. The colonial modernist trials led to the exclusion of the indigenous inhabitants and the ongoing expansion of informal housing areas. Informal settlements arose when non-Europeans were forced to live on the city outskirts due to legal restrictions.

During the post-colonial era, the newly established governments began creating new blueprints for their major cities. One of the most intriguing experiments was the Nyerere socialist vision, which not only created a detailed plan for Dar es Salaam but also influenced the development of the new capital of Dodoma, established in 1974, marking the end of an era. The foundation of the master planning effort is the concept of '*Ujamaa*' (family hood) for rural communitarian economic development. Guidelines for managing an Africanised Garden City, focusing on social and physical aspects. All aspects of these plans appeared flawless, however, the majority of them were merely a front. The recently urbanized and impoverished residents were unable to pay for either a car or public transportation to navigate the extensive urban areas, and even the government couldn't meet the expected public funding, leading to heightened inequality and reinforcing segregated urban development. There was a lack of comprehension regarding the vast size of the emerging informal city.

2.4 Attempts to Adapt the Informal Spatial Dynamics in Tanzania

2.4.1 Historical Evolution of Adaptation Attempts in Tanzania

From the start, Tanzania's government has shown clear hostility towards informal settlements and their related activities in its cities since gaining independence (Collin et al., 2015). The government adopted the strategy of slum clearance to clear away the city squatters, who were considered as “eyesore” to the cityscape (Ndezi, 2009). The eviction policies and programs that thrived in the 1970s were involved in approving the destruction of the informal settlements. In this timeframe, informality and the spaces connected to it were seen as a problem that needed to be resolved right away. Foreigners viewed informally constructed areas in urban locations as unattractive (Mushi & Lupala, 2015). Dar es Salaam's urban area was designed to fulfill specific functional purposes that held significance during different time periods. In the 19th century pre-colonial period, urban space was shaped by the daily interactions of all users, leading to intricate economies. The city was organized into three concentric zones by Arab invasion in the 1860s. The pointed crenelation and carved entrance door with floral and geometrical patterns of the Old Boma building were inspired by traditional East African coastal architecture, seen in 19th century buildings in Zanzibar and Bagamoyo towns. In 1870, Sultan Majid passed away and Seyyid Barghash, his successor, showed little concern for Dar es Salaam and held his court in Zanzibar. The disregard for the overall plan led to informal changes in shape influenced by economic ties formed in rural areas.

In 1891, the German colonial administration rebuilt the city during the German occupation. They incorporated perpendicular streets from the Sultan's city. The Germans kept the stone buildings in this city and did not relocate it. They also implemented planning and zoning rules that relied on racial bias and assigned distinct areas for different racial groups. As indicated in Figure 2:14, Zone I was designated for the "European Residential Quarter", Zone II was designated for the "Commercial as well as Indian Quarter", and Zone III was designated for the residential area for natives where only basic structures were permitted. They also established the Cordon Sanitaire, now known as Mnazi Mmoja open space, as a transitional area dividing the European and Indian sections from the African community of Kariakoo. The planning and zoning regulation ('the Bauordnung') specified strict development guidelines for the buildings to be constructed.

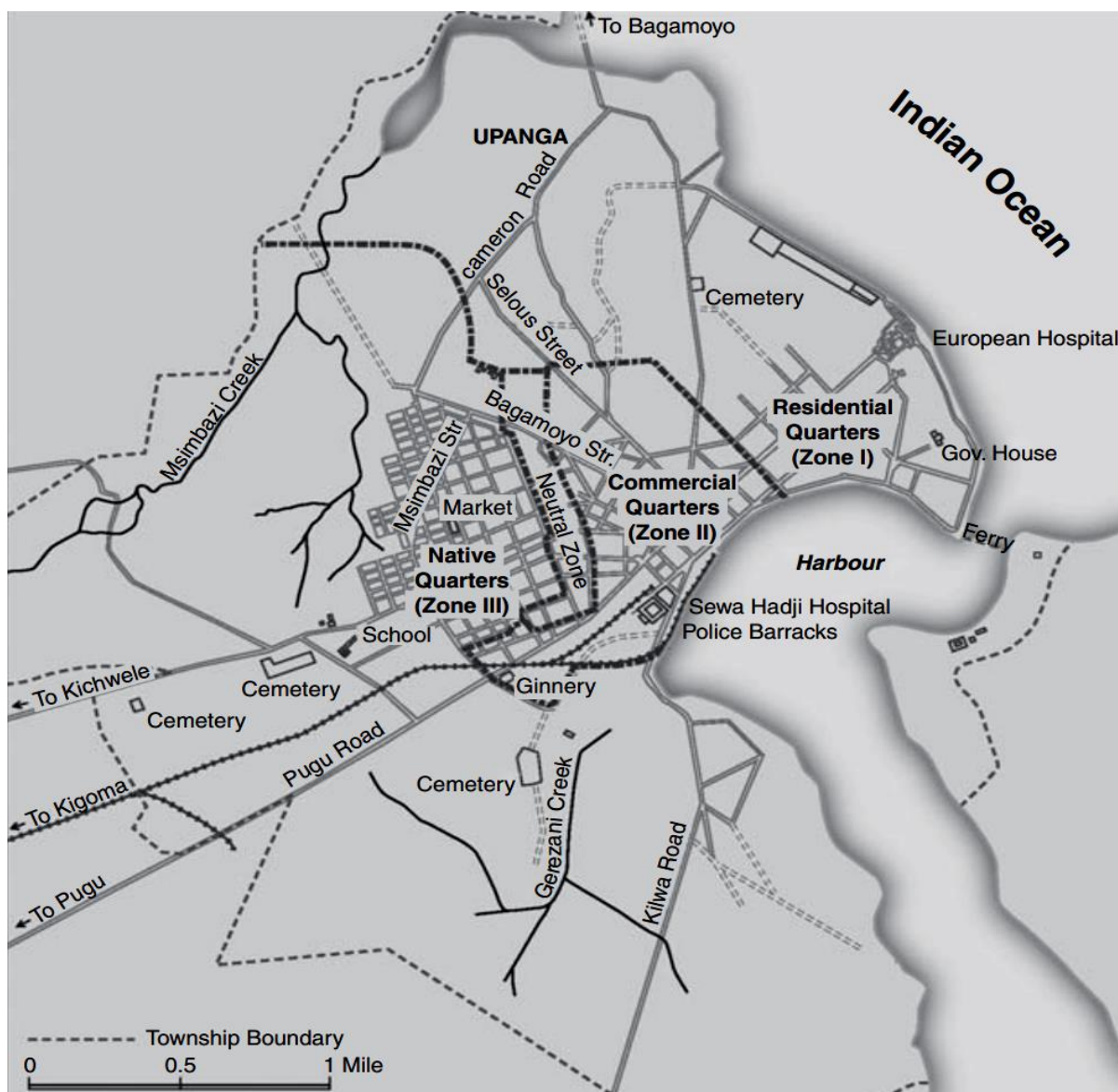
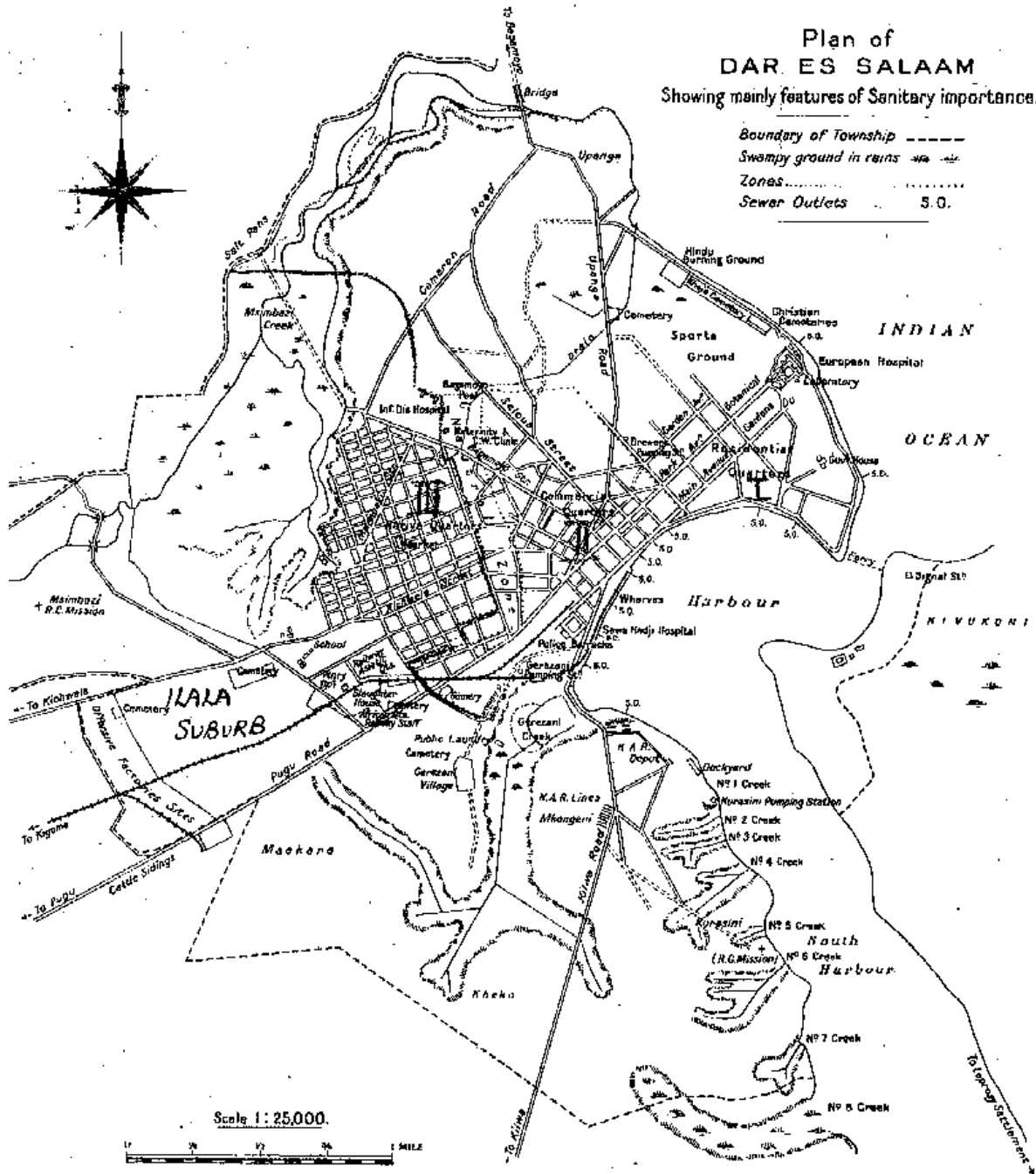


Figure 2:14. Colonial Dar es Salaam's three zones as stipulated in the 1914 *'Bauordnung'*
Source: Dill, (2013)

The British were unwilling to adjust the spatial characteristics of those who came before them from 1916 to 1961 (Brennan & Burton, 2007; Wilt de Boer 1984 in Moshi, 2009). The British implemented the Germans' urban segregation plans in 1924, along with architectural styles they created. (Brennan & Burton, 2007). They expanded the grid further west, beyond the current Msimbazi Street (Figure 2:15). The British took additional steps to clear the houses that were situated in the open area serving as a sanitary buffer between the African townships and Zones I & II, which were later popularly known as Mnazi Mmoja. The Africans were left by the British in Kariakoo and Ilala from the late 1920s. Various urban 'villages' like Gerezani and Keko were also included within the township boundaries. During the early British colonial period, Africans were allowed to use local materials to construct their homes on designated land plots.



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Drawn by A. C. S. G. & H. M. from a plan supplied by the Health Officer. No. D: 388

Law, Survey & Mines Dept. T.T. 4.4.1925

Figure 2:15. African informal settlements within British township boundaries in 1923

Source: <https://exploringafrica.matrix.msu.edu>

During the late colonial period, the ‘Swahili’ type house remained the favoured design for those building their own houses. The lack of resources to enforce strict segregation resulted in the organic growth of a town perfectly exemplified in the Mikoroshoni area. During the early independence period, from 1961 to 1967, the old planned city, the planning and city management structures inherited from the colonial period were adapted by the independent government. The

racial basis of organising space was abolished and instead, cultural diversity and integration were left to grow. The street layouts in the old city spaces remained the same as during the colonial period. However, the architecture of buildings produced during this period began to depart from the earlier styles and influences and began to adopt functional and international styles (Moshi, 2009). The concept of Master Plan as a basis for structuring the development of the city was also adopted. The informal settlements began to grow in size and population. The periphery continued expanding horizontally through unplanned settlements and the inherited city centre was redeveloped through demolitions and filled with new building types.

From 1967 to 1985, the city started experiencing the impact of politics on its urban structure in the *Ujamaa* period. A new policy called "*Ujamaa*" in Swahili, meaning "socialism and self-reliance policy," was implemented to steer Tanzania's future development. The *Ujamaa* policy introduced the idea of *Ujamaa* villages, promoting communal living in rural areas instead of urban areas. This policy resulted in the creation of numerous new *Ujamaa* villages through a villagisation program in the following decade (1967–1976). *Ujamaa* villages were built in certain ways to encourage self-reliance in both economic and community aspects. The villages were planned with houses arranged in rows, with schools and town halls located at the center complexes. The villages were encircled by larger communal farming fields. Each household received approximately one acre of land to grow food crops for their own consumption. Nevertheless, the enforcement of this strategy on the outskirts of Dar es Salaam acted as a trigger for the city's growth into its surrounding peri-urban area (Owens, 2014). A lot of city dwellers are looking for ways to use peri-urban land for urban farming. In the early 1990s, after the Tanzanian government stopped following socialism and started introducing free-market reforms, resettled city dwellers, mainly elites from rural areas, had established a suburban economy combining urban lifestyle with suburban farming (Owens, 2014). Certain *Ujamaa* villages like Mbagala, located near Dar es Salaam, were being engulfed by the city and incorporated into it.

In the years following Independence (1985 to present), Tanzania shifted from the *Ujamaa* policy to a policy of economic liberalization, especially in the mid-1980s. Private investments were promoted by the new policy. The speed of change that began in the 1980s accelerated in the 1990s and surged in the 2000s. The closely spaced grid pattern of streets and plots in Kariakoo (zone III) has mostly preserved the original spatial layout designed by the colonial rulers. The architecture present at independence is a mix of various cultural influences,

including Arab, Indian, African, and European traditions. Kariakoo's urban layout has evolved from mostly single-story structures to a mix of multi-level buildings with different architectural designs. In Zone I, several old German residential houses were replaced by new structures, particularly multi-storey offices and institutional buildings. New modern buildings are taking the place of traditional Indian structures in the former Indian region. The planned city remains adherent to the colonial regulations and standards for construction. The minimum allowable plot size ranges from 400 to 600 square metres, a considerable measurement that restricts access for the less affluent. Presently, the outskirts close to downtown are undergoing a gentrification procedure due to corruption and property speculation (Rasmussen, 2013). However, the informal urban area has expanded and evolved without any guidance from maps within the main roads and on the outskirts – a situation that was fueled by the rapid influx of rural population into urban centres.

2.4.2 The Contemporary Adaptation Attempts and Policy Framework in Tanzania

Over 60 years, the government of Tanzania has shifted from exclusionary to more inclusive strategies to address urban informality resulted from rapid population growth coupled with the government failure to provide housing services to cope up with that situation (Changula, M. N and Guya, 2024). Various inclusive policies and programs were introduced to govern the government's planned adaptation leaving aside the toleration of the informal activities of production of space which was not initiated intentionally. The policies and laws include, the National Land Policy of 1995, the Land Act of 1999, the National Human Settlements policy of 2000 and the Urban Planning Act of 2007 (Nuhu et al., 2023). Integration of informal settlements has become a step towards a new form of managing urban development and Informal settlements are no longer seen by public authorities as a transitory phenomenon, rather as permanent and lasting fact of life.

In the 1970s, the government introduced the Sites and Services and Squatter Upgrading; in-situ, provision of basic services restrained modest demolition of existing houses. Under this program, appropriate sites were identified, planned and provided with basic infrastructure services before allocating the plots to developers. The sites identified had also to accommodate displaced people from upgraded-unplanned housing areas. However, the World Bank withdrew support due to poor performance, and by the early 1990s, rapid urbanisation and population growth had outpaced government efforts. Despite some improvement in housing provision, the

sites and services program did not achieve its objectives because of some reasons, including mismanagement, the failure of cost recovery (Moshi et al., 2018)

By the early 1990s, the failure of squatter upgrading led to a shift towards participatory approaches, emphasizing local community involvement. Community-based organizations (CBOs), nongovernmental organizations (NGOs), and communities began working together to improve the informal settlements under participatory approaches. The Local Government Support Program (LGSP) launched the Community Infrastructure Upgrading Program (CIUP) in 2003 with the goal of improving and expanding services and infrastructure, including waste management, roads, drainage, water, sanitation, and street lighting (Ndezi, 2022). Further, in 1995 the government of Tanzania enacted the National Land Policy of 1995 – a situation that fueled the efforts to adapt the informal spatial dynamics as the policy prohibited further demolitions of informal settlements that prevailed in urban areas during those periods. The policy states that: "*areas built without a plan will not be demolished but will be improved except for those built in dangerous areas such as valleys and steep slopes, and areas designated for special public use such as roads, power lines, oil pipelines, water, etc.*" The National Land Policy of 1995 also advocated for informal settlements upgrading and provision of basic community facilities, except to settlements located in hazardous areas. In support for the national land policy of 1995, the Land Act No. 4 of 1999 went further formally recognizing the informal land property rights through introduction of the land rights formalization program. The Land Act No. 4 of 1999 implemented two new formal land tenure options for residents to obtain. The initial option is referred to as a Certificate of Right of Occupancy (CRO), which grants a leasehold of urban land for a period of 33 to 99 years. The Tanzanian government views CROs as the ultimate goal of formalization, designed to be fully transferable and used in the mortgage market. However, according to Kusiluka and Chiwambo (2018), there has been minimal advancement in providing informal residents with access to CRO because of complicated requirements like a cadastral survey and paying all overdue property taxes, as well as lengthy waits and significant bureaucracy, hindering most landowners from obtaining titles. The 1999 Land Act also introduced a new type of formal tenure called a residential license (RL) as a stepping-stone. Further, the CROs opened a room to legally controlling the informal construction activities through the use of building permits in formalized settlements as it is stipulated in the Land Act no 4 of 1999, section 34 (2) that; -

'It shall be a condition in every grant of a right of occupancy where the purpose for which the grant has been made is to construct buildings on the land that the grantee of such right shall, in any case where any consents and permissions are required, apply for planning consent under the Town and Country Planning Act, and apply for a building permit under the Township (Building) Rules within six months of the grant of the right of occupancy' (URT, 1999)

In 2000, the government undertook a comprehensive land reform and regularisation of informal settlements. It adopted the national human settlements policy that promotes compact urban development to achieve organised, efficient, healthy, safe, secure and aesthetically pleasing sustainable human settlements. Similarly, the 2000 National Policy on the Development of Human Settlements prohibited the eviction of informal settlements and committed to their modernisation and regularisation by community-based organisations (Magina, et al., 2020). The government therefore launched the formalisation of real estate and businesses programme (MKURABITA) in 2004, which was implemented in 2008. This project included a participatory approach as required by the 2007 Land Act, whereby beneficiaries contribute money through a cost recovery scheme and participate in project planning and execution (MURABITA, 2012). Through this scheme, residents of regularised informal settlements can acquire rental rights through renewable RLs, initially valid for six months but later extended to two years and with a possible extension to five years (Collin, et al., 2015). Figure 2:16 and Figure 2:17 show the areas covered by the Phase I and Phase II of the Residential Licence programme in Dar es Salaam. The Ministry of Lands, in cooperation with the Temeke and Mwanza City planning authorities, has launched formalisation projects at Sandali (Temeke) and Mkolani, Mhina, Butimba, Nyakata, Nyamagana and Kitangiri (Mwanza City) in Temeke. The project was implemented with a World Bank loan from 2008 to 2013. However, the law has been criticised for not recognising and accepting some popular land management practices in informal settlements, such as informal land distribution.



Figure 2:16. Residential license program phase I (2004 – 2006) in Dar es Salaam
Source: (Manara, 2020)



Figure 2:17. Residential license program phase II started in 2019 in Dar es Salaam
Source: (Manara, 2020)

However, while RLs are more accessible and affordable, there has been limited progress in extending access to CRO for informal residents despite its greater benefits. In order to tackle these difficulties and make it easier to reach CROs, the government has permitted extensive regularization programs, notably during the ten-year plan from 2013 to 2023. Pilot programs were carried out in seven Municipalities from 2016/2017 onwards (MLHHS, 2016a, 2018). Apart from Dar es Salaam, other cities such as Kigoma-Ujiji, Lindi, Musoma, Singida, Sumbawanga, Tabora also have unplanned settlements, which make up approximately 36% of the city area on average (ranging from 57% in Musoma to 8% in Singida) (MLHHS, 2018). Utilizing funding from the World Bank, the MLHHS implemented a trial regularization program in the Kimara Ward of Dar es Salaam, a relatively affluent neighborhood approximately twelve kilometers from the city center along the Morogoro Road, with the ambitious objective of distributing 6,000 CROs within a span of three months (Kusiluka and Chiwambo, 2018; Omar, 2017).

The Urban Planning Act of 2007 Section 23 of the Urban Planning Act No.8 (2007) acknowledges informal settlements as planning zones and aims to formalize and develop schemes for their regularization (Magina et al., 2020). According to Babere (2020), informal settlements must undergo significant development before they can be formalized or improved.

The NHSDP acknowledges the rise of informal and underserviced settlements, allowing residents to improve and legalize them with the help of Community-Based Organisations (CBOs) and Non-Governmental Organisations (NGOs) while the government assists in the process. The government, through local governments, will aid residents in establishing and managing CBOs and NGOs to improve their communities. However, the delay in intervention planning pending substantial development of the settlements as required by the Urban Planning Act of 2007, had resulted to the disappearance of commonly utilized spaces in urban areas that was caused by changes in land use (ibid). Further, the concerns to improve the informal settlements, was also accompanied with the concern to regulate developments in such areas using the urban planning regulations as summarized in Table 2:2 which shows an extract from the urban planning (space standards) regulations of 2018. Table 2:2 among others, avails the standards of spaces such as plot sizes, setbacks, ratios, and coverage (s) for areas including the informal settlements which its enforcement rely on building permits. However, scholars particularly in urban planning and design fields concur that building permits are rarely suitable for guiding the informal processes of production of space due to the costs and bureaucratic procedures that are associated with them (Bahendwa, 2013; Moshia, 2005; Msuya et al., 2018; Omar, 2017).

Table 2:2. Urban planning space standards for informal settlements

	Type	Plot Size in m ²	Max. No. of household	Max. No. of Buildings	Max. Plot coverage %	Max. Plot ratio	Max. No. of storeys	Minimum Setbacks in Metres		
								front	sides	rear
i	Informal settlements	90 - 300	1	1	80	2.5	4-6	5	1.5	3

Source: Urban Planning Space Standards, 2018.

Generally, the Tanzanian government adapts the informal spatial dynamics by formally recognising the informal processes of production of urban spaces together with their associated spaces and allowing them to co-exist with their formal counterpart within Dar es Salaam's larger city context; through toleration of the informal activities of production of space, land tenure regularisation in informal settlements, physical regularisation of the informal settlements, accommodation of informality in urban plan regulations, and engagement of the building permits to control the informal activities of production of space in informal settlements. The approaches used to adapt the informal spatial dynamics are summarised in Table 2:3. Some of current redevelopment plans are incorporated in the Dar es Salaam master plan of 2012 – 2032 (Ministry of Lands, 2013) and the current road networks improvement programs under the Dar es Salaam Metropolitan Development Programs (DMDP) mainly sponsored by the World bank (PMO-RALG, 2014).

Table 2:3. Approaches used by the government of Tanzania to adapt informality

	APPROACH	GOALS/ CONSEQUENCES
1.	Toleration of the informal activities of production of space	No goal (s) as it is an unplanned activity
2.	Land tenure regularisation in informal settlements	Gentrify the informal settlements
3.	Physical regularisation of the informal settlements	Achieve compact Urban form
4.	Accommodation of informality in urban plan regulations	Achieve informal ordered environments
5.	Engagement of the building permits in informal settlements	Control informal production of space

Source: Author own construct and literature review, 2021

2.5 Theories Involved in This Study

The following are the four theories namely; Unitary theory of space, Cultural-Historic Activity Theory, Systems Evaluation Theory, and Place Theory that were involved in guiding this study:

2.5.1 Unitary Theory of Space

Euclidean geometry was originally used to define, describe and limit space. According to Rice, (2015), until 1970 The majority of human geographers believed until 1970 that space was empty but filled with objects, static, inert and neutral. Space was segregated off from people, societies, cultures, economies and politics during this time. Later theorists and geographers such as Lefebvre, Foucault and Soja began to consider space as more than just geometric (Rice, 2015). The new geographers believed that, space is not an object or vessel, but rather a product and a means of production, created and constructed socially and in harmony with human relationships. Lefebvre's (1991) unified theory or conceptual triad of space is considered essential to a contemporary, systematic understanding of the concept of space. This theory divides modern space into three categories: mental, social and physical. Surface space is also referred to as “physical or perceived space.” Not only is it directly or physically experienced, but it is also material, socially produced, empirically verified, and generated through everyday activities. “Mental, imagined space” or “spatial representations” are theoretical concepts that arise in the mind before they are physically implemented or staged. Although these representations may include other characters, symbols, and spatial illustrations in addition to the language itself, they are often literally the blue prints found in documents that were created. “Lived or representative space” refers to the space that can be experienced in everyday life through the complex symbols and images created by its “residents” and users. This is a place that people consciously imagined or built. Due to their individual design, these rooms can contradict the formal or official representation space.

According to Rice (2015), these representations are encoded, decoded, and encoded through individuals' interpretations, which may include the social and cultural paradigms of the time. Lefebvre's spaces are conceptually abstract because they refer to several different theoretical conceptions of space (Rice, 2015). The aim of this study is to shed light on the processes through which individuals in informal settlements acquire land and design their spaces, as well as the variables that influence their decisions in these processes. It focuses on the way space is physically created.

Additionally, based on the Lefebvre's conceptual triad of space, Urban morphology deals with a threefold reality: perceived, lived, and conceived. This recognizes that urban forms are concrete manifestations, fundamental constituents of how the urban world appears to us (Chiaradia, 2019). According to Lefebvre (1991) and his unitary theory of space, space can be created through physical, social, or semiotic means (Rice, 2015). The creation of physical space involves tangible and noticeable alterations to a setting through actions such as constructing, excavating, gardening, building, painting, crafting, relocating items, and changing. Space can also be generated when trying to shape, manipulate, and control space along with the people and activities permitted or required to utilize it (Zieleniec, 2018). In managing space, individuals set up regulations to control entry to certain areas and territories both physically and visually, utilizing objects like barriers, hedges, and partitions to outline the boundaries and functions of spaces (Nguluma, 2003). Having control over a space means being able to defend it from any unwanted access, creating both private and public areas. Drawing on his experience in Bombay, India, Correa (1985) divides outdoor space into four levels of space Figure 2:18. "A" represents the area required by the family for personal use only, like cooking, sleeping, and storage which are considered private; "B" represents spaces of close interaction, such as the front doorstep where kids play or where one can talk with a neighbor. These can be seen as somewhat private areas. "C" represents the local gathering spots where individuals join the community; while "D" signifies the main city areas utilized by everyone and considered public.



Figure 2:18. Hierarchy of spaces
Source: Correa, 1985 in Nguluma, 2003

According to the theory of social production, the actions of people and social groups create space. In this case, the physical space is not always changed, but the actions of the users change the classification, meaning and purpose of the space (Rice, 2015). The production of meaning and (literally) signs is called semiotic production. Production occurs when people produce goods actively rather than passively (Rice, 2015). According to Zieleniec (2018), space can also be created by efforts to modify, control and manage an area and the persons and activities that are permitted or necessary for its use. Space management and exploitation are closely interlinked. Because of their desire for privacy, humans have imposed restrictions on access to certain areas and spaces, both aesthetically and geographically.

2.5.2 Cultural-Historic Activity Theory

In this study, Cultural-Historical Activity Theory (CHAT) was utilized to comprehensively grasp the informal processes involved in production of space. As per Hashim (2007), CHAT is a theoretical model used to evaluate and comprehend human interaction by incorporating tools and artifacts. It is a theory that describes, rather than predicts. It offers a tool and a group of structures for understanding information gathered about the situation through observation, interviews and other techniques (Lee, 2011). The Theory focuses on establishing 'who is performing actions, for what reasons, and in what manner'. According to Iyamu and Shaanika (2019), CHAT views an 'activity' or an 'activity system' as the primary focus for analysis. Activity is a resilient structure where the division of labor divides various goal-driven tasks and merges them to achieve a common purpose (Engeström & Sannino, 2021). An Activity system is described as "a community of individuals who have a common goal and purpose, along with the various tools they utilize collectively to work towards achieving that goal" (Buddendorff, 2015; Engeström & Sannino, 2021; Foot, 2014). Activity theory posits that a joint activity, with a common goal shared by a community, is carried out by individuals who are driven by a motive or towards resolving a problem, facilitated by tools utilized to reach the desired outcome. Cultural factors, such as conventions and social organization, shape the activity within the immediate context and are influenced by wider social patterns. According to Hasan & Kazlauskas (2014), in the example of building activity, the purpose of an activity is perceived differently by the builder and the client. For the builder, it may involve constructing a new house, while for the client, it may represent a new family home or an investment property. Additionally, as stated by Hasan & Kazlauskas (2014), tools can be categorized as primary (physical), secondary (language, ideas, models, etc.), or tertiary (communities, context, or

environments). Hasan & Kazlauskas (2014) provide an illustration of tools used for construction purposes: In the house construction process, the main tools are the typical ones used by workers, including the hand tools like hammers, tape measures, builders' square, and the spirit levels while additional tools involve the building plans and builder's expertise, and tertiary tools may consist of the builder-owner relationship and relevant regulations like environmental laws and bushfire safety standards. Modifications in situations may necessitate adjustments to the blueprints, consequently altering the direction of the construction work. These are times when there will be an active mediating connection between the action and the different primary, secondary, and tertiary tools (Hasan & Kazlauskas, 2014).

Outcomes of an action may be deliberate or accidental; an individual or a group can be the focus; arrows between subject, object, community, division of labor, community, and instruments (tools) help identify tensions within an activity system (Lee, 2011). Understanding tensions is key to determining the driving forces behind specific actions of the system and its development (Aksenova et al., 2014). According to Engestrom et.al (2005), when data is divided into tools, rules, division of labour, and community, conflicts emerge between the subject, the object, and the outcome (Figure 2:19).

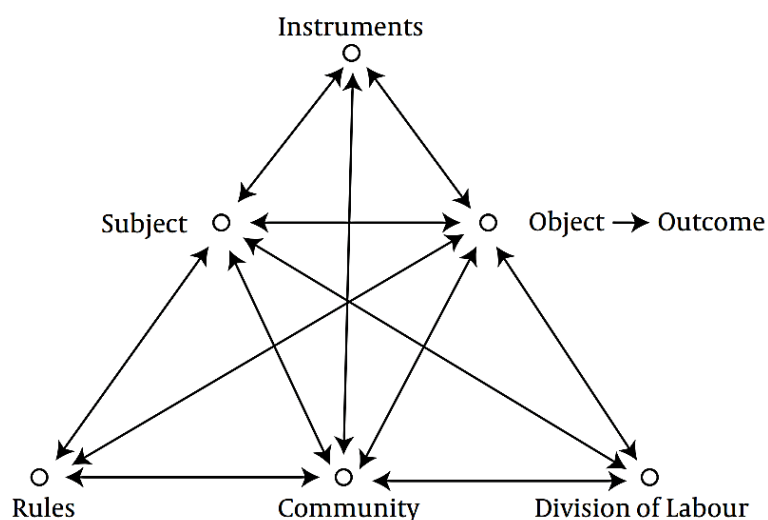


Figure 2:19. The basic schematic of an activity system as developed by Engestrom
Source: Fardanesh & Maleki, (2016)

Hasan & Kazlauskas (2014) created a method for applying Activity Theory in real-world situations. Hasan & Kazlauskas (2014) outline a three-step process for examining a real-world situation through the perspective of Activity Theory. The initial step consists of identifying the important actions of the system being studied along with the subject (s), object, and purpose of each activity; the next step involves identifying the tools and actions used in the activity or

activities, which can be primary, secondary, or tertiary; and the last step is discovering the dynamics and conflicts present in and between the recognized activities.

Hasan & Kazlauskas (2014) delve deeper into steps 1, 2, and 3 within the contexts of urban design, planning, and architecture traditions. In these areas, the 'Actions' typically aim to shape or create the urban form. In these customs, actions are assessed by examining the location (physical context - urban design) in which they occur. This is achieved by simplifying it through breaking it down into its individual components, primarily Plots, structures, and outdoor areas. From these elements, conversations about how they were created can be explored. One of the methods in this tradition is the process-typological approach to studying urban form morphology. This method is highly preferred, particularly when examining types of informal housing developments. Asquith, in agreement with this view, asserts in Maina's 2024 study that:

“Architectural approaches are primarily typological, concentrating on the physical form and structure and how architectural styles have evolved through time. These are usually based on plans, layouts, elevations and sketches, which are traditional tools architects employ to represent buildings. Architectural approaches have also been concerned with identifying spatial organization, patterning and configurations of space to understand the hidden order within houses” (Maina, 2024).

The approach of Process-typology investigates the grassroots processes of urban transformation, collective uses of spaces, and the emergence of informal settlements (Correa, 1985). Kropf (2018) explains that the process-typological analysis starts by distinguishing between spatial and temporal relations, known as Co-presence and Derivation by Caniggia & Maffei (2001) in Kropf (2009). The examination of Co-presence starts with a theoretical layout of component divisions that create a structure: individual parts, arrangements of parts, sets of arrangements, and entities of sets. This framework is initially implemented on separate structures, using elements like bricks, timber, tiles, etc. as building materials. The configurations of elements consist of the arrangements of construction materials in components like walls, floors, and roofs. Systems of structures involve organizing these components into areas like rooms, stairs, and corridors, with the building acting as a whole. The towns are planned in a similar manner, using buildings as the primary components (Caniggia and Maffei, 2001). When examining spatial relationships, different forms are classified as types based on cultural development within the local context.

To this end, pioneered by Saverio Muratori in the 1950s, the school aims at integration between typology, the systematic categorization and conceptualization of building types, and the field of urban morphology that examines the compositional and configurational relationships between different elements of urban form (i.e., plot, street-block, and building). Based on the typological thinking initially developed by Muratori (1959), Caniggia and Maffei (1979) further developed the conceptualization of 'typological processes' and the relationship between urban form and transforming building typologies. Cannigia and Maffei (1979: 47), who define the homogeneous group form created by similar building types in a particular historical period as 'urban tissue' (tessuto urbano), are the representatives of the paradigm that conceives the city as a kind of organism. From this perspective, the development of the urban form is handled with a process that keeps change and continuity together and adapts the existing typology to the future. That approach implicitly considers keeping the continuity of the building typology as the product of the local cultural context, the primary task of urban planning and design (Cataldi et al., 2002, p. 4)(Çalışkan et al., 2023).

Together with the Process – typology method, Pojani (2019) created a theoretical structure for analyzing the urban layouts and building designs of informal settlements (Table 2:4). Pojani's (2019) framework takes into account the various factors such as social, economic, cultural, political, and institutional contexts in which informality occurs, as well as the settlements and houses. Salama (2019) critiqued Pojani's (2019) framework on housing. As per Salama (2019), the model proposed by Pojani (2019) failed to adequately cover the ontological and epistemological aspects.

Table 2:4: Conceptual framework for urban form and architecture of informal settlements

Context (social, economic, cultural, political, institutional – national and local)			
Settlement	House	Dwellers	Process
Size and location Layout and density Land use Public space Image and identity	architecture and symbolism materials and technology	conditions of existence place attachment	Origins Consolidation Gentrification Redevelopment

Source: Pojani, 2019

In this research, the first step focused on examining the circumstances in which land acquisition and spatial organization processes occur. In this research, context includes physical aspects like land use, structures, outdoor areas, infrastructure, as well as non-physical factors like social, economic, and political influences on behavior. In Step 2, the focus was on identifying the main

players along with their objectives and intentions in the land acquisition process and spatial organization. Step 3 focused on explaining how the spatial compositions were formed. Step 4 focused on highlighting the informal spatial dynamics and the tensions that arise among the activity systems. In this research, the result of an action is related to the object of the action such as obtaining a piece of land. Subjects were individuals engaged in performing the tasks. The tools in this study include the land parcels, time, financial resources, strategies for obtaining land, and tangible items such as trees for marking boundaries. Rules are norms and regulations that oversee the process of obtaining land and building homes. Community is made up of individuals like land brokers, landowners, urban planning authorities, and planners who share a common interest in the activities. Division of labor pertains to the responsibilities of every participant in the tasks.

2.5.3 Systems Evaluation Theory

Evaluation theories are employed to guarantee systematic evaluation and analysis of intricate systems. The only theory for systematically evaluating complex systems is Systems Evaluation (Renger et al., 2017). According to Renger (2015), SET is divided into three phases: system definition, system efficiency assessment, and system effectiveness assessment. In order to describe a system, one must define its boundaries, subsystems, processes (both inside and between subsystem processes), connections, feedback loops, attributes, inputs, and common goal or goals. An imaginary line separating the system being studied from all other elements is called a system boundary. The starting and ending points of the subsystem processes define the boundaries of the subsystems, which are shown as a continuous line enclosing each subsystem in Figure 2:20. Subsystem processes' operational steps are denoted by the terms "start" and "end," and they are connected by a solid arrow to indicate that there are most likely many steps and choices in between. Determining the relationships or exchanges between subsystems is the following stage. Determining whether feedback mechanisms are in place and assessing their efficacy is the next stage. Feedback guarantees that a system can adjust to changing requirements and circumstances and enables it to make timely modifications. Diagram 1:5 uses dashed dual arrows to show two feedback mechanisms both within and between subsystems. System attributes are the characteristics of a system that specify its degree of excellence, actions, and capabilities. According to SET, a system's effectiveness is influenced by four essential components: leadership, competent and competent system participants, a functional ICT infrastructure, and a shared commitment to the system's goals (see the capitalized attributes

in Figure 2:20). Any one of these system attributes being absent can lead to system inefficiencies. Inputs include any assets or resources required to ensure the system runs effectively.

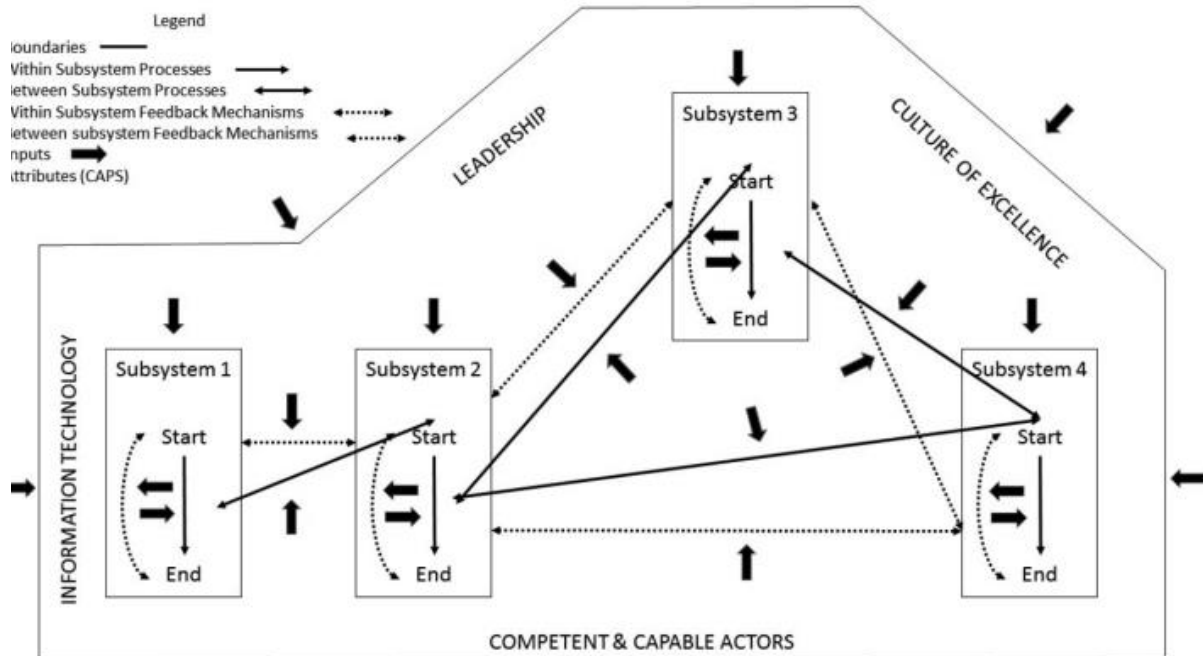


Figure 2:20. Defining key system elements for the system evaluation plan.

Source: Renger, (2015)

According to Mergoni and De Witte (2022), a system-wide performance analysis assesses the efficiency of decision-making units and takes into account their ability to convert input into output. The system efficiency study assesses how well the decision-making units are performing according to the objectives (Mergoni & De Witte, 2022). Where a system or subsystem is goal-free, its effectiveness and efficiency are evaluated by the goal-free method (Youker and Ingraham, 2014). SET was involved in this study to evaluate the success of the systems that are used to adapt the informal spatial dynamics as explained further in section 3.2.1.

2.5.4 Place Theory

This study wants to know how the resulting urban forms from adaptation support the socio – economic struggles of its residents. In this context, the place theory was seen relevant as it understood urban form from a humanistic perspective paying attention to the social and cultural values of the physical spaces (Chen, F 2021). The theory states that, places are more than just physical locations; they are spaces imbued with meaning, identity, and emotional significance as shaped by human interactions, memories, and cultural associations. The theory argues that

the human-place connections influence how people interact within a space, how they perceive its value, and ultimately how they contribute to maintaining or reshaping its form and function. In place theory social and cultural values, visual perceptions of users, and individual control over the immediate public environment are important principles. When applying place theory to urban form, architects and urban planners can examine how built environments shape, and are shaped by, the experiences and identities of the people who inhabit them. Analysis of a built-form typically incorporates place attachment and social and functional uses among others. Place Attachment is the degree of attachment that residents feel towards certain areas. Strong place attachment often relates to environmental quality, accessibility, and social opportunities within the urban form. This understanding can guide decisions on public spaces, housing layouts, and transportation to improve residents' satisfaction and interaction within urban environments. Social and Functional Uses refer to the social dynamics and functional roles that urban forms play in meeting residents' needs (Muminovic, 2015). The user – space relationship welcomes the user-centered theory of the built environment which is based on the idea that the built environment exists to support the activities of its users. The User – centered theory help us understand the relationship between the built environment and its users, and how successful the built environment is at meeting the needs of its users. Function or use refers to people's activities that give rise to and are accommodated by certain built landscape constituents (Inusa et al., 2022). In this study, the Place theory was used to assess the ability of the urban forms born by adapting the informal spatial dynamics, to support the socio – economic life struggles of its dwellers (Inclusiveness or generally resilience of urban form). The inclusiveness is measured in terms of its support to socio – economic life struggles of the dwellers.

2.6 Critics to the Theories

The Lefebvre's unitary theory of space received many critics since its existence. However, in this study the relevant were those related to complexity, socio – economic resilience of urban form and involvement of technology in production of space. Farmahini Farahani and Sarrafi (2021) challenged Lefebvre's concepts of spatial practice, space representations, and representational spaces by applying Vygotsky's cultural-historical theory. They contended that his theory is unclear in its explanation of how individuals interpret space. Additionally, Unwin's (2000) five primary critiques of Lefebvre's work were emphasized by Sanga (2022). These include the following: Lefebvre's use of the word "space" is out of date and restricts his ideas; he treats space as a finished product rather than something that is constantly being created,

which leaves his framework incomplete as urban spaces are not static and continuously transform through incremental adaptations, socio-economic shifts, and political interventions. The absence of a clear temporal framework in Lefebvre's triad makes it difficult to analyze how spaces emerge, evolve, and decay in response to changing conditions; he concentrates too much on space production and overlooks everyday experiences that influence inequality and human life; he fails to demonstrate how space production results in social change; and his definition of place is ambiguous.

The Cultural – Historical Activity Theory (CHAT) was challenged for not reinforcing on the component of time. According to Stetsenko (2020), CHAT understands human development, as a relational and situated process, but in reality, human development is not just about relationships and situations but is also about actively shaping the world with purpose. People contribute to a constantly changing world through shared actions, influenced by their beliefs and goals for the future. This process is never neutral—it always involves ethical and political choices. CHAT need to shift from the relational and situated perspective to Transformative Activist Stance (TAS) – *“a realm where human activities, actions, and deeds form the ultimate grounding for the world that is not discovered, nor merely experienced, but instead enacted and realized (or co-created) by people themselves (Stetsenko, 2020)”*. Stetsenko (2020) calls this realm - a *“lived struggle”* — *“an arena of human historical and life quests and pursuits, enacted as collective efforts at becoming fraught with contradictions and conflicts — infused with dimensions of values, interests, struggles, power differentials, and intentionality including goals, visions, and commitments to the future”*. However, Stetsenko, (2023) agree that, CHAT outlines and steps that can enable it move beyond the relational paradigm towards a transformative worldview (Stetsenko, 2023). In CHAT, human development is an open-ended, dynamic, non-linear, and ever-unfolding, that is, *emergent process* with no pre-programmed rules or blueprints and highly contingent on context (Stetsenko, 2023). Further, Qureshi (2021), noted CHAT being faced with critics on the way it incorporates the role of individual agency and that it privileges the social over the individual.

There are also other critics from Murphy (2022) who first, noted the unclear relationship between the subject and the outcome. He doubted whether the object referred to the material result of an activity or to an objective; the motivation driving the activity, as in English the word object refers to both the material and the objective or motive. He also noted the term *‘Contradictions’* lacking a clear definition and posited that, many studies fail to make the

distinction between systemic contradictions and their manifestations. Murphy (2022) also questioned the extent to which context is accurately considered in CHAT. However, Blunden (2010) notes that, as has been identified by other writers “*even if it is admitted that it is necessary to include the context, it leads to an infinite regress. Where do you stop?*”. Murphy (2022) further argues that, an inability to address cultural difference at the smallest unit of the subject matter undermines the claim that activity theory allows for a context relevant analysis.

The Place Theory also receive critics, among them came from Luckan, Y. (2023) who noted that, the Universally adopted methods of studying existing urban environments and their design/redesign, perpetuate objectivist notions of place-making. The approaches ignore subjective experience as a vital determinant of urban being, dwelling and belonging. Through the observation of physical phenomena, place theory codes urban experience to its tangible attributes, but unintentionally promotes reductionist viewpoints. Convenience is inherently preferred over complexity in the definitive structuring and analysis of the urban system through objectivist methodologies, which is why it still dominates urban place-making theory and practice. Luckan, Y. (2023) further suggested that, an epistemological and ontological counter-position, fundament on the expression of human potentiality at the level of consciousness is necessary. Urban complexity is therefore considered a dynamic process of constant synergies between people in place and time, underpinned by a timeless spirit of place. The critical importance of the time scale, that impacts the dynamic transformation of spaces into places through a type of continuous present, implies that urban design and architecture must factor in scales of measurement beyond the physical. “..... *Analysis and conception of place, therefore, can never be independent of the multisensory perceptions of people, in place over time*”. By incorporating subjectivist design thinking methods at a level of consciousness into the experiential drama of urban life performed by individuals at different spatial and temporal scales, an inclusive urban identity can be achieved.

2.7 Theoretical and Conceptual Frameworks

2.7.1 Theoretical Framework

The need to avail the informal spatial dynamics that are crucial in formal adaptation emerged after this study noticed the uncertainty of results, that is, the urban forms that emerge by adapting the informal spatial dynamics – specifically their architecture and socio – economic resilience. This study felt it was necessary to be clear about the type of space of interest and

the mode of its production before delving into exploring its informal processes of its production. Henri Lefebvre's Unitary Theory of Space or conceptual triad of space was selected to guide the understanding of the kind of space under production and associated processes. This theory was selected as it takes care of the relationship that exists between space and human beings contrary to others like the human geographers who considered space static, inert and neutral, an emptiness filled with objects (Rice, 2015). To understand how space is produced informally, this study considered the informal processes of production of space as a complex activity system. According to Dovey (2012) any study on informal settlement should recognize the inherent complexities embodied in their spaces and their production processes. Cultural – Historic Activity Theory (CHAT) was then chosen to guide an understanding of the complex system of informal production of space as according to Gladman & Grainger (2022), CHAT can be used to make sense of complex situations. CHAT consider an activity as a system and hence analyses it as a whole not in parts in order to understand its reality. CHAT was also seen appropriate in the context of this study as it also added a layer of factors and contradictions that cause changes in the system and hence influence its development. The Cultural-Historic Activity Theory (CHAT) was used to study how people acquire land and organise space in informal settlements together with the factors influencing their decisions. CHAT emphasizes the roles of various actors, the tools they use, the community norms, and the division of labour, providing insights into the socio-cultural and historical contexts that influence these activities. To understand the way, the informal spatial dynamics are being adapted, this study also considered the adaptation as a complex system as their results are often not easily predictable. The Systems evaluation system was then involved in analyzing the system of adaptation of the informal spatial dynamics. This theory was involved as according to Renger, (2015) it is the only theory used in evaluating systems. Systems Evaluation Theory (SET) is employed to assess the effectiveness and efficiency of formal system adaptations to these informal dynamics by examining the impacts the formal systems used in adapting the informal spatial dynamics pose on urban spaces. Place theory was then used as a lens in exposing the relevant aspects of resulting urban form that resulted from adaptation. Place theory helped this study to focus on exploring only the aspects of urban form that are linked to socio – economic resilience of the settlement and its users. The place theory was selected to guide the perception of urban form and explain its meaning as far as this study is concern. Using the place theory, this study understands the Urban form in humanistic perspective. Figure 2:21 and Figure 2:22 summarise the adopted theoretical framework and conceptual frameworks respectively. The theoretical

framework integrates Lefebvre's Unitary Theory of Space, Cultural-Historic Activity Theory, Systems Evaluation Theory, and the place the Place theory to comprehensively explore informal spatial dynamics and their adaptation attempts.

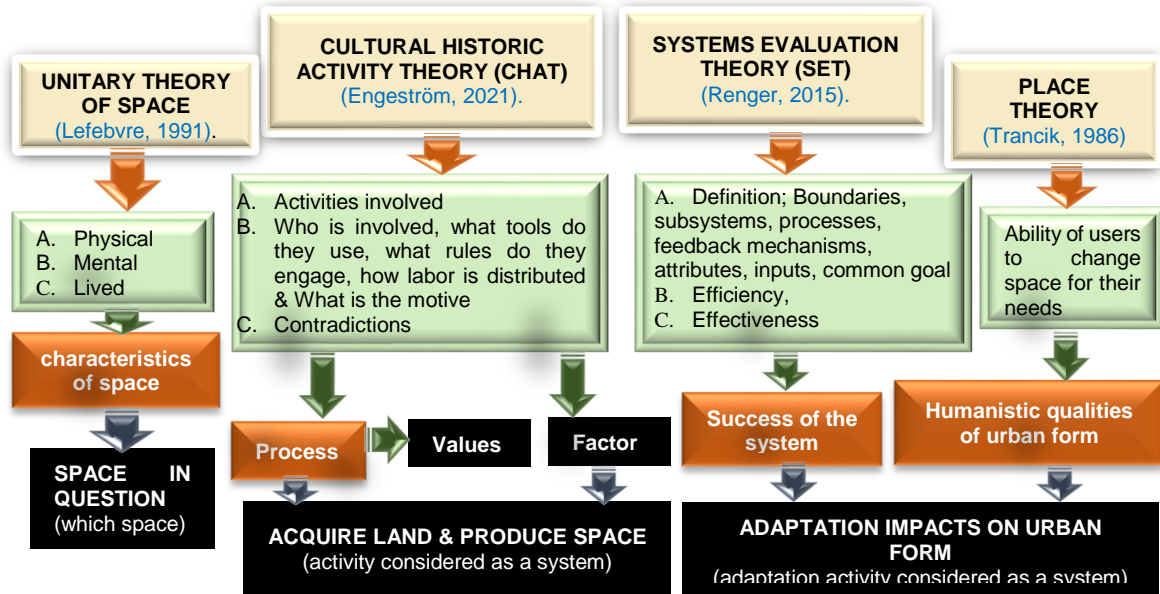


Figure 2:21.Theoretical framework for informal space production, adaptation & urban forms
Source: Author, 2021

2.7.2 Conceptual Framework

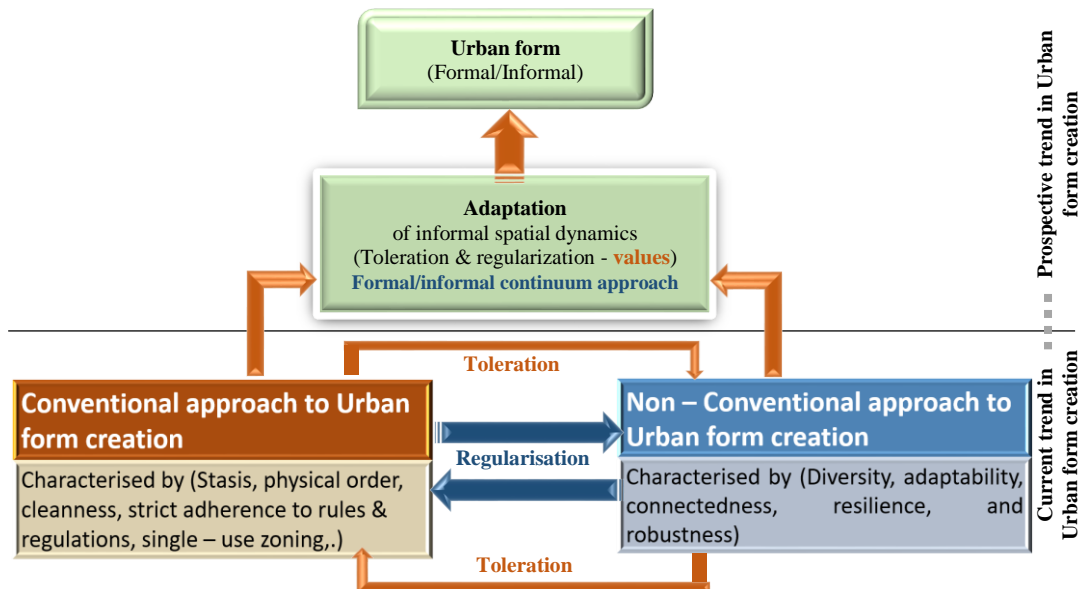


Figure 2:22.Conceptual framework for informal space production, adaptation & urban forms
Source: Author, 2021

2.8 Summary

This chapter presents an analysis of informal spatial dynamics, particularly focusing on the interactions between formal and informal development processes within cities, by integrating three pivotal theoretical frameworks: Henri Lefebvre's Unitary Theory of Space, Cultural-Historic Activity Theory (CHAT), and Systems Evaluation Theory (SET). Lefebvre's theory dissects the concept of space into three intertwined dimensions—physical, mental, and social—offering a lens to view space not just as a physical entity but as a dynamic social construct shaped by human actions and societal structures. This perspective is crucial for understanding the varied ways in which space is experienced and manipulated in informal settlements. Expanding on this, CHAT provides a deeper dive into the socio-cultural and historical layers that influence how communities in these informal areas undertake land acquisition and organize space. It highlights the roles of different community members, the tools they employ, and how local norms and the division of labour impact the spatial organization, thus offering a granular view of the social fabric that underpins spatial arrangements. Lastly, SET offers a critical evaluative framework that assesses the effectiveness of formal urban planning interventions in these informally developed areas. It scrutinizes how well these interventions meet their objectives and explores their efficiency, pinpointing where they might exacerbate existing issues or fail to address the root causes of spatial challenges. Together, these theories provide a comprehensive framework that not only elucidates the complex interactions between formal and informal urban processes but also assesses their implications for urban form and resilience.

The chapter examined the informal practices of space production from the medieval to contemporary periods, highlighting governments' efforts to learn from and integrate informal traditions. For instance, the medieval cores of many European cities evolved from upgraded informal settlements. During the Renaissance, urban planners retained the irregular medieval layouts, supplementing them with grand squares and straight roads. In Dar es Salaam, the German colonial administration adopted right-angled streets from the Sultan's town. These examples illustrate global efforts to adapt informal spatial dynamics. In Tanzania, the National Land Policy of 1995 laid the foundation for such adaptation by prohibiting the demolition of informal settlements, enabling subsequent policies to build on this framework.

CHAPTER THREE

3 RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methods and procedures employed in conducting the study. It offers tools that play a role in grasping the informal processes of creating space and how they are adapted. This involved analysing the situations in which the production of space and its adaptation were occurring, how various actors obtain land and organise or produce space in informal settlements, and the different factors influencing their decisions in shaping and using the resulting spaces. It also offers tools to understand how the government adapts them and the essence and impacts of such adaptation attempts on the urban form of the resulting urban space. Finally, the reasons for choosing the research methods and why they are deemed appropriate in this specific case were discussed.

3.2 Research Design

This research employed descriptive and exploratory research methodologies. Descriptive involves observing everything happening in the setting by asking general questions (Moser & Korstjens, 2018). On the other hand, Exploratory research seeks out causes and factors, offering proof to back up or oppose a hypothesis or forecast. It aims to elucidate and justify the provided details. The descriptive and exploratory designs were used in this study to answer four research questions: *How do people acquire land and organise space in informal settlements? What are the factors causing spatial changes in informal settlements? How does the adaptation of informal spatial dynamics affect the resulting urban forms? And why do governments adopt the informal spatial dynamics?* The “*what*” and “*how*” questions regarding the research problem in this study were addressed under *descriptive* traditions, as, according to Loeb et al. (2017), descriptive research design helps to answer the “*what*,” “*when*,” “*where*,” and “*how*” research questions regarding the research problem, rather than the why. The question “*Why do governments adopt the informal spatial dynamics?*” in this study was addressed under the *causal or explanatory research design tradition*, as, according to Boru (2018), explanatory studies seek to ask ‘why’ and ‘how’ questions. This study was also *cross-sectional*, specifically *Multiple cross-sectional*, as according to (Creswell & Creswell, 2018), if data in a research is collected at one specific point in time, the study design is referred to as Cross-sectional. The summary of this study’s design is provided in Figure 3:1.

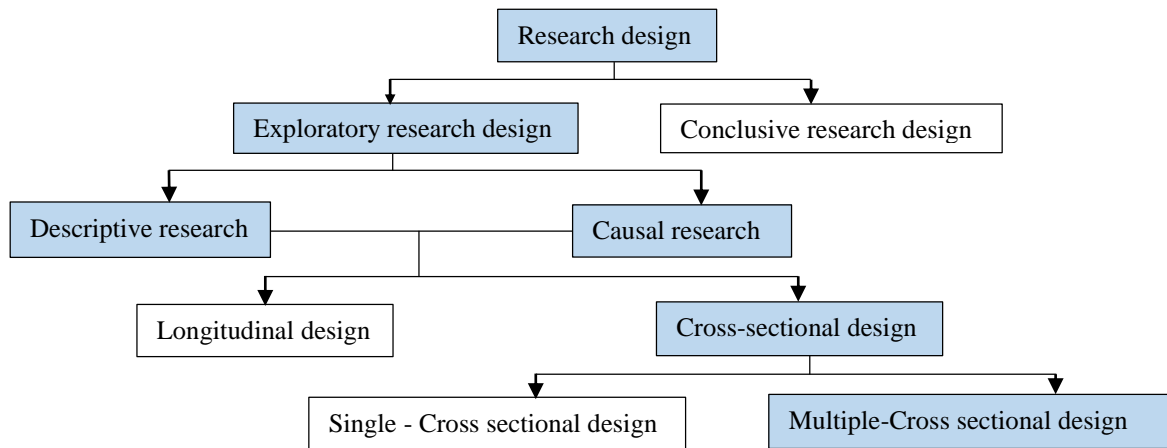


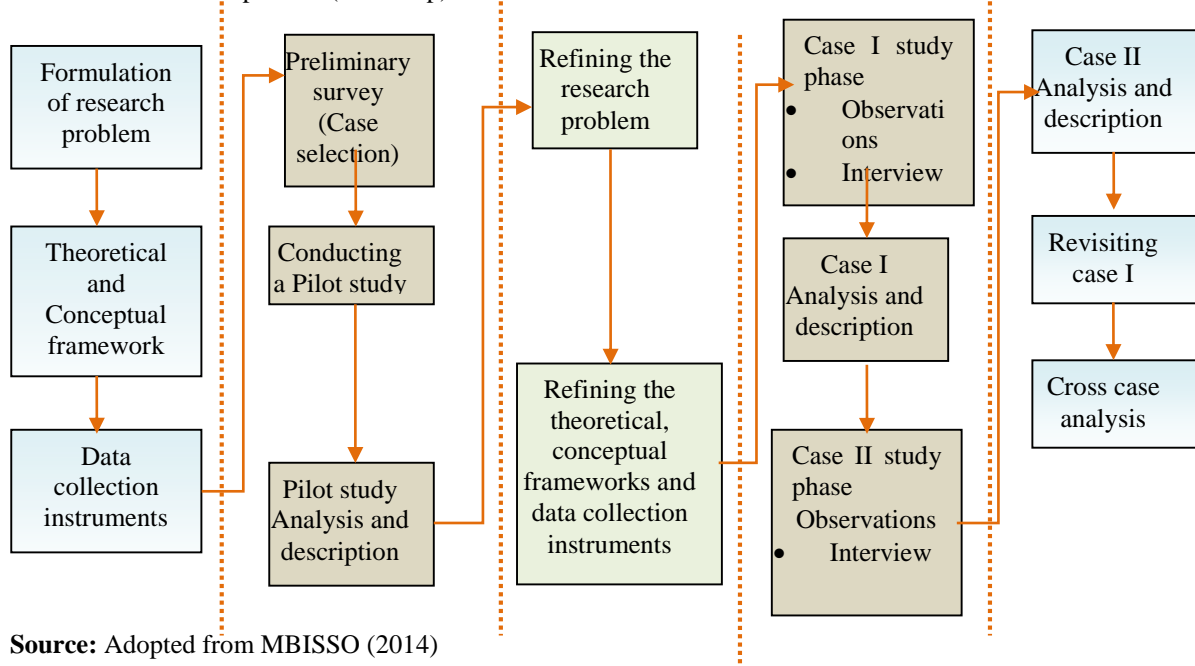
Figure 3:1. Research design adopted in this study

Source: Author own construction, 2024

3.2.1 Research process

Information gathering from the case study sites was methodically carried out from one case to the following (Table 4:1). The lessons and shortcomings from one case study area were used to enhance performance in the other cases. Case study reports were written using the same procedure. Comparative analysis was conducted to identify common trends and differences across the individual cases. This analysis aimed to uncover the potential implications of these patterns for theory, planning, and policy issues and serve as a foundation for developing recommendations and drawing conclusions.

Table 3:1. Research process (Roadmap)



Source: Adopted from MBISSO (2014)

The theoretical framework in Chapter 2 guided the process of collecting data. Based on the theoretical framework, this study aimed to get information to answer four key questions, as referred to in section 1.6. Based on these questions, the task of collecting information was undertaken in four steps as follows: -

Step 1 involved conducting a Reconnaissance study in the Mamboleo “B”. The general reconnaissance of the case study area was accomplished by analysing the physical and non-physical contexts in which urban space production processes take place. The physical context involved physical components of urban form such as the plot, dwelling units, and streets. Its analysis entailed an overall overview of the settlement layout, dwelling condition, configuration of plots, public facilities, urban space categories, social services available, topography, location, dwelling typologies, and the dwelling compounds’ spatial compositions. The non-physical context included the social, economic, and political factors influencing the actions. The exploration of non-physical context is aimed at capturing information such as the history of a place, dwellers’ socio-economic conditions, factors influencing developers’ decisions, and the costs of investment in dwelling constructions or improvements. The methods of physical observations (refer to 3.3.1), mapping, sketching, and photographic registration, sometimes supplemented with some unstructured interviews, were employed in collecting information on the physical contexts. In contrast, the in-depth interviews and surveys were involved in collecting the non-physical aspects of these case study areas, as explained more in section 3.3.

Step 2 involved exploring information on “*How people acquire land and organise spaces in informal settlements*” and “*What are the factors causing spatial changes in informal settlements?*” This was done by analysing the way an individual acquires a piece of land, builds a house, installs services and obtains title to his land in the Mamboleo “B”. Data collection activity adopted a mixed-method approach and was centred within the Cultural Historical Activity Theory (CHAT) traditions. Based on CHAT, this step entailed highlighting the critical actors involved in the activities, tools used, rules engaged, and the objects and outcomes of the activities. Further, this considers other stakeholders that influence the activities in one way or another and the way labour is divided amongst the key actors performing the activities. The key actors were identified using information from sub-ward government officials, literature, and long-term residents. The process started with a thorough investigation of literature to recognise the important structure of informal space production, along with the subjects, objects, and goals of each activity. Conducting an empirical study in the second phase of data collection aimed to

discover the actions and mediating tools used in the activities. The third step included pinpointing the conflicts or elements among the activities using the activity system triangle.

Step 3 involved an evaluation of the impacts of the adaptation of informal spatial dynamics on urban form and the reasons for the government to adapt to the same (appendices 5 and 8, and section 3.3.2.1). As a case study site, this evaluation occurred in Kilungule “A” settlement of Ubungo Municipality of Dar es Salaam city. Key questions here were: **1.** *“How does adaptation of informal spatial dynamics take place?”* **2.** *“What were the impacts of informal spatial dynamics adaptation on urban form?”* **3.** *“Why do governments adopt the informal spatial dynamics?”* Systems evaluation theory (SET) was involved in answering the first question about how adaptation takes place. Step 1 dwelt on defining the informal spatial dynamics adaptation system used in Kilungule “A”. It involved understanding the way adaptation takes place, the adaptation system’s boundaries, subsystems with their processes, relationships, feedback mechanisms, attributes, inputs, and common goal(s). Step 2 concentrated on evaluating the efficiency of the informal spatial dynamics adaptation system. Step 3 involved evaluating the spatial dynamics adaptation system’s effectiveness. The methods of data collection involved interviews to acquire information on the way *adaptation of informal spatial dynamics was taking place*. The methods of physical observations, mapping, sketching, and photographic registration, sometimes supplemented with some unstructured interviews, were employed in collecting information on the impacts of informal spatial dynamics adaptation on urban form. The surveys were employed in seeking the reasons the government adopts the informal spatial dynamics.

Step 4 was devoted to assessing the adaptation outcomes on Kilungule “A” ’s urban form. This step was used to answer research question 2. In this step, the first activity was to identify the production activities of space that the government was tolerating. The information gathered from dwellers involved questions such as *“What informal space production activities do they perform? What are the activities tolerated by the government?”*, and *“What results do we see on the ground as a result of such toleration or regularisation?”* In-depth interviews, on-site physical observations, and Google imagery were used. During the in-depth interviews, multi-select questionnaires were used to collect information. The question *“Why do governments adopt the informal spatial dynamics? Moreover, what the common goal(s) of adaptation activities* were addressed when seeking to know the common goal (s) of adaptation activities.

3.2.2 Choice and justification of research strategy

This research utilised a multiple-case study research design with embedded cases. By utilising a combination of methods, researchers can provide thorough answers to questions (Enosh et al., 2015; Alasmari, 2020). Using a combination of methods leverages the advantages of various approaches and addresses their limitations to optimise the likelihood of effectively addressing research inquiries (Sharma et al., 2023). Embedded mixed methods research integrates both quantitative and qualitative data within a single study, using one method as the primary and the other as secondary (Gamage, 2025). This research uses the Embedded Mixed Method (EMM) approach, noted as “QUAL, quan”, which integrates a quantitative study within a primarily qualitative study. QUAL, quan means that the study is primarily qualitative, but uses some quantitative data collection in quantifying some of the qualitative themes to determine which themes were mentioned more frequently (Guest & Fleming, 2016). The qualitative and quantitative data are collected at the same time. In this method, the integration of quantitative and qualitative approaches takes place during data collection, exploration, analysis, and visualisation. Further, the reason for selecting a case study approach was influenced by its definition according to Yin (2009) and the specific informational needs. In Yin's (2009) definition, a case study is characterised in the following way:

“A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident” (Yin, 2009).

A modern phenomenon arises, mainly not relying solely on past data sources like data or open-source repositories (Wohlin, 2021). He also mentions that the studies concentrate on events that actually happen in real-life situations, such as in industrial settings (Wohlin, 2021). The information is sourced from real-life events or scenarios and typically involves individuals (Wohlin, 2021). Yin (2006) suggests that case study research is most suitable for addressing descriptive or explanatory inquiries. Descriptive case studies focus on current or past events, while explanatory case studies aim to understand the reasons behind the phenomena being analysed (Löser, 2015). Using a holistic perspective is commonly seen as valuable when addressing questions about the reasons and methods, and identifying areas requiring detailed investigation (Ebneyamini & Moghadam, 2018). Moreover, as stated by Coombs (2022), a case study involves the selection of either one case or a few cases within their actual real-life setting.

This study dwells on gaining people’s experiences in acquiring land and organising space in informal settlements and various factors that impact their decisions while conducting such activities. The researcher had to seek experiences from various actors, such as individual dwelling owners, public sector officials, and private sector practitioners. The researcher went to the field to meet the actors, such as dwelling compound owners and users of spaces like public spaces and asked them questions to gain their experiences and observe the built environment, emerging dwelling compound spaces, buildings, and public spaces. Additionally, the study examines the contemporary phenomenon of shaping and utilising spaces in informal settlements. Numerous players exist in this process, both inside and outside the settlements. The informal settlements represent a real-world setting because space shaping and utilisation methods occur in a physical setting. Regarding the processes of space shaping and utilisation in informal settlements, the pertinent questions for this study are “*what*,” “*how*,” and “*why*.” That meant that the emphasis was on combining exploratory and descriptive narratives to comprehend how urban spaces in informal settlements are produced and utilised.

3.2.3 Selection of cases

This study took place in two cases of informal settlements, namely Temeke Mamboleo “B” and Kimara Kilungule “A” (Figure 3:2), found in Dar es Salaam City, Tanzania.

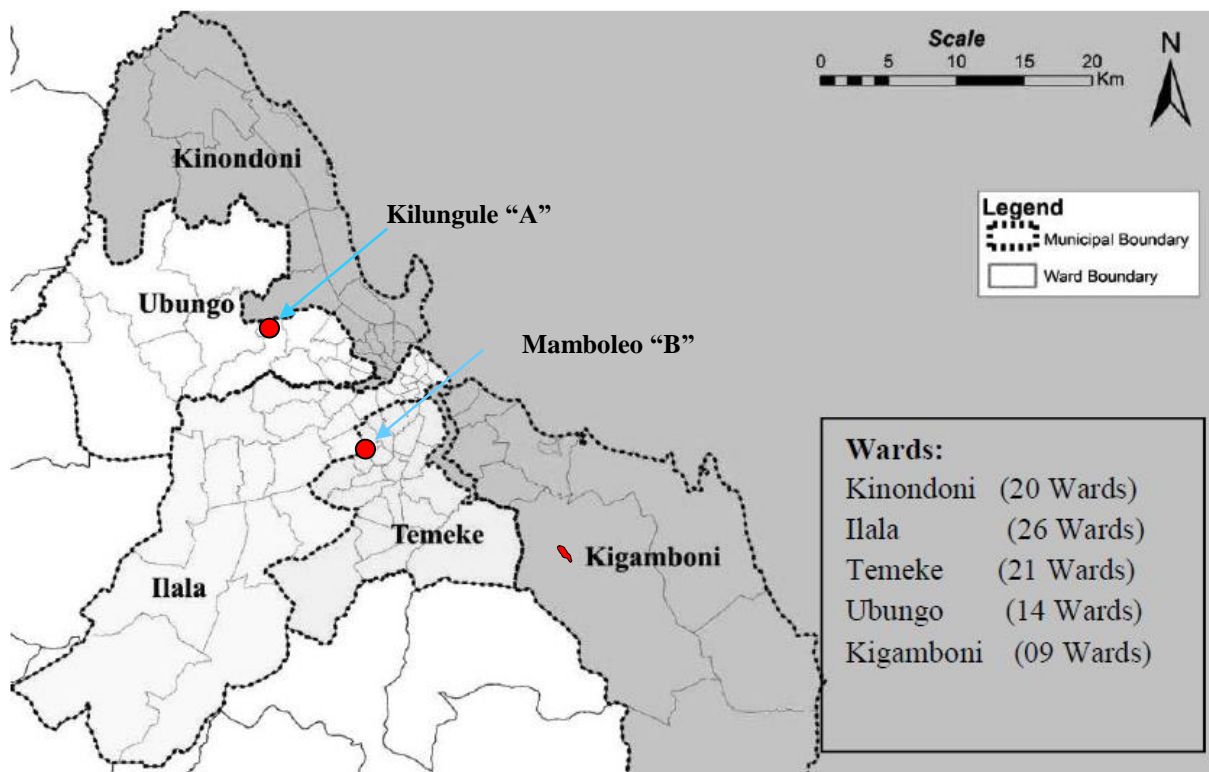


Figure 3:2. Kilungule “A” and Mamboleo “B” settlements in Dar es Salaam city
Source: Adapted from SmartAKIS (2018)

According to Shaheen et al. (2018), meaningful qualitative research requires one case rich in spatial dynamics and another rich in information on the adaptation of informal spatial dynamics. The sample needs to be information-rich. This research employed purposive sampling to select buildings, plots for assessment, and interview respondents from the case sites. The effectiveness and strength of purposeful sampling rely on choosing data-rich cases for thorough analysis since these cases encompass key research topics; hence, purposeful sampling. (Shaheen and colleagues, 2018; Sukmawati and others, 2023).

The rationale behind the selection of Kilungule “A” sub-ward among the case sites is well understood when the sub-ward is situated within the Kimara ward where it belongs. Kimara ward was selected in 2016 as the initial ward in Dar es Salaam, where the government showed a strong ability to adapt to informal spatial dynamics by formalising the area and giving Certificates of Right of Occupancy (CRO) to residents. In 2016, the Ministry of Lands, Housing, and Human Settlements Development in Tanzania initiated a pilot project for formalising land tenure in the Kimara Ward of Ubungo Municipality. The Kimara project is a pilot project led by the government in which the government oversees the planning and surveying stages (Manara, 2020). Regularisation activities at Kimara were carried out by the MLHSD and included planning and surveying expenses. Land owners had to contribute an amount of money between TZS 100,000 and 140,000 for operational costs and basic infrastructure installation (Kusiluka & Chiwambo, 2018). Dovey (2012) argues that it takes time to observe changes in the shape of cities. According to this study, a settlement with a history of adaptation efforts can identify the physical effects of adapting informal spatial dynamics on its urban form. However, due to the lack of resources to cover a larger area, the study went one step further and reduced the scope of the case to sub-sectors, as Kimara Ward has six sub-sectors, as shown in Table 4:3. The criteria for selecting the location of the case are set out in Table 4:3 in columns A, B, C and D, which are described in Table 4:2. Of the six sub-regions, Kilungule “A” was selected based on its score in Table 4:3, as it had the highest overall score of 29 points. Table 4:2 shows that Kilungule “A” received 15 points for being the first sub-district in Kimara to be regularised by issuing a certificate of right of occupation, 4 points for being a sub-district where the government allows informal space production and can serve as a source of information, and 3 points for being a sub-district where the researcher is more familiar with the necessary information.

Table 3:2. Criteria set for the selection of Kilungule “A”

No.	Criteria	Points
A.	The first sub-ward to be regularised with CROs in the Kimara ward	15
B.	A regularised sub-ward in which the government tolerates the informal activities of space production.	12
C.	A sub-ward where past studies took place	5
D.	A sub-ward where the researcher is conversant with and hence could easily access information.	3
Total		35

Source: Author own construction, 2024

Table 3:3. Weighing the six (6) Kimara’s sub-wards

No.	Sub - wards	A	B	C	D	Total score
1.	Kilungule ‘A’	15	7	4	3	29
2.	Kilungule ‘B’	14	7	1	1	23
3.	Kimara Baruti	10	7	3	2	22
4.	Mavurunza	10	7	1	1	19
5.	Baruti	10	7	1	1	19
6.	Golani	10	7	1	1	19
Total						131

Source: Author own construction, 2024

The Mamboleo "B" settlement in Tememe Municipality of Dar es Salaam city was selected as a case study location to investigate the informal methods of creating space. This particular settlement was selected because it is one of the informal settlements where the creation of living spaces includes various layers of negotiation, appropriation, and consensus, making it a rich area for studying how urban living spaces are produced spatially. The layout of the settlement is uneven, with twisting streets and pathways for movement. It includes compact buildings, diverse land uses, buildings with different purposes, and plots with various shapes and sizes, ranging from 46m² for smaller ones to 417m² for larger ones. There are no public areas specifically designated for the community. Individuals gather in open areas amidst structures, residential gardens, stores, and stalls.

At both locations, Kilungule "A" and Mamboleo "B", the selection of respondents was done using the model used by Hasgöl (2016). Three groups of participants, specifically home owners, government urban planners and designers, and professional practitioners from the private sector, were chosen. Individual homeowners were individuals who possessed residences within the specified locations. Public sector officials served as local government officials at municipal and sub-ward levels. At the local level, these individuals consisted of urban planners, architects, and engineers who worked at the municipal level. The local leaders at the sub-ward level included the *Mtaa* Chairperson, *Mtaa* Executive Officer, and the Ten cell leader. Private sector practitioners included both skilled professionals and unskilled individuals who were involved in the informal processes of acquiring land and building homes. The professional private practitioners were architects, engineers, and planners who were employed privately, while the local masons and brokers represented the unprofessional private practitioners.

In Kilungule “A” and Mamboleo “B”, the interviews involved 86 and 79 respondents, respectively, equivalent to a total of 165 respondents (Tables 3.4 and 3.5, respectively). The decision on the number of respondents was based on purposive sampling, precisely the

Snowball sampling strategy, whereby the cases were selected gradually in three rounds until a saturation point.¹⁸ Was reached. Snowball sampling usually finishes once a saturation point has been reached (Daher, 2022; Guest et al., 2020). In Kilungule "A" and Mamboleo "B", thirty-nine, twenty-eight, and nineteen respondents were chosen in the first, second, and third rounds, respectively. Similarly, thirty-six, twenty-five, and eighteen respondents were selected in the same rounds in the two locations. In Mamboleo "B", individuals who own dwellings and private practitioners, both unprofessional and professional, involved in informal space production were chosen through snowball sampling. The individual homeowners resided in the neighbourhood, while the unprofessional private practitioners, such as brokers, did not have offices or any searchable database. On the other hand, the professional private practitioners were involved in informal activities. Public sector officials were selected using purposive sampling because their offices are easily identifiable.

Table 3:4. Mamboleo "B" and Temeke municipality respondents' information

	Respondents	Age				Gender		Employment		Occupation							
		20-30	31-40	41-60	Over 60	M	F	EM	PE	CP	MEO	TL	LM	LB	A	P	E
1	Individuals dwelling owners	-	1	14	11	19	7	-	26	-	-	-	-	-	-	-	-
2	Public sector officials	6	7	-	-	11	2	13	-	1	1	4	-	-	2	3	2
3	Professional Private practitioner	6	15	6	-	26	1	-	27	-	-	-	-	-	15	3	9
4	Unprofessional Private practitioners	4	6	3	-	13	-	-	13	-	-	-	8	5	-	-	-
	TOTAL	12	22	34	11	69	10	13	66	1	1	4	8	5	17	6	11
	GRAND TOTAL	79				79		79		N/A							

KEY: M – Male; F – Female; EM-Employed; PE –Private employment; CP – Chairperson; MEO – *Mtaa* Executive Officer; TL – Tencell leader; LM – Local mason; LB – Land property broker; A – Architect; P – Planner; and E – Engineer.

Source: Author own construction, 2023

Table 3:5. Kilungule "A" and Ubungo municipality respondents' information

	Respondents	Age				Gender		Employment		Occupation							
		20-30	31-40	41-60	Over 60	M	F	EM	PE	CP	MEO	TL	LM	LB	A	P	E
1	Individuals dwelling owners	2	2	10	16	22	8	-	30	-	-	-	-	-	-	-	-
2	Public sector officials	2	7	6	-	14	1	7	8	1	1	6	-	-	2	3	2
3	Professional Private practitioner	2	9	7	-	16	2	-	18	-	-	-	-	-	10	5	3
4	Unprofessional Private practitioners	6	14	3	-	22	1	-	23	-	-	-	12	11	-	-	-
	TOTAL	12	32	26	16	74	12	7	79	1	1	6	12	11	12	8	5
	GRAND TOTAL	86				86		86		N/A							

KEY: M – Male; F – Female; EM-Employed; PE –Private employment; CP – Chairperson; MEO – *Mtaa* Executive Officer; TL – Tencell leader; LM – Local mason; LB – Land property broker; A – Architect; P – Planner; and E – Engineer.

Source: Author own construction, 2023

3.3 Data Collection Methods

Data gathering occurred in two primary stages, with the first phase designated as the preliminary stage and the second as the primary phase. The process of gathering data was meant to begin on a case-by-case basis, focusing on getting familiar with the critical essential sources of information, such as interviewees, local authorities, department heads, family dwellings, neighbourhood settings, and others: the first stage aimed to gain a thorough understanding of the study area. The information to be collected includes its physical and architectural condition,

¹⁸ If repetition of stories occurs among participants and no new information awarded to the researchers by any new participants, then the data is said to reach a saturation point" [31, 20].

general changes, potential sources of information, characteristics of the social groups involved, and current community infrastructure. The primary data collection methods used in this phase were general observation of the physical condition of the Mamboleo “B” settlement and informal discussions with residents, heads of ten cells, hospital staff, subdivision officers, and planning officers from Temeke and Ubungu Municipalities. The photographs, sketches, maps, satellite images, and documents were also analysed. 12% of all respondents interviewed during the survey participated in the pilot survey interviews. Among the data collected at this stage was the importance of ten cell leaders as key informants. They were also essential in guiding the selection of respondents in the respective fields and increasing confidence in the researcher’s work. Kilungule “A” Sub-ward officials also provided general information on political, economic, regional, demographic, historical, and social development issues in the case area. The information gathered from this phase formed the strategy for conducting the study’s second phase. Information from each phase was analysed and interpreted before entering another phase to notice the data saturation point whenever it was reached.

This study involved several data collection methods to gather data from different sources. They were specifically chosen based on various factors, including the data the researcher hoped to gather. The following tools are used to collect data:

3.3.1 Observations

Non-participant observations were first used in the first stages of data collection in Mamboleo “B” and Kilungule “A” to identify the physical contexts in which the production of space and adaptation of the informal spatial dynamics take place. In Mamboleo “B”, the method was used in step 1 to capture the physical aspects of the settlement, such as the overall settlement layout, dwelling condition, configuration of plots, public facilities, urban space categories, and others. They were also conducted to identify unbuilt spaces and activities within the buildings. Information from observations was recorded using Photos and sketches. Among the questions involved are “*How does adaptation of informal spatial dynamics affect urban forms?*”, “*What are the relevant effects of adaptation? What occurred in urban form by adapting the informal spatial dynamics?*” Kilungule “A” required observations of the physical aspects of the settlement as the adaptation exercise impacted them. This stage entailed physically identifying the impacted components by observing the resulting Kilungule “A” urban spatial compositions and configurations. However, in both case sites, observations went together with mapping,

sketching, photographic registrations, and document analysis—interviews with the owners of the affected plots, buildings, and unbuilt spaces supplemented observation records.

3.3.2 Interviews

An interview is a method of collecting data where an interviewer questions participants in person, over the phone, or online. Different interview styles vary greatly, but all have a common feature of utilising questions to gain insight into individuals' thoughts, emotions, attitudes, and actions (Roberts, 2020; Stuckey, 2013). According to Wiles & Crow, (2013), interviewing is seen as a form of social research that is democratic and liberating because it allows marginalised voices to be heard. As per Moser & Korstjens (2018), this instrument prompts the individuals' encounters, viewpoints, ideas, and emotions. The participants were questioned about the reasons behind spatial transformations in informal settlements, the types of space creation activities permitted by the government, and the regions impacted by the government's adjustment efforts.

3.3.2.1 In-depth interviews

The in-depth interviews with the landowners in both case sites were conducted to collect information on how space developers acquired land, built houses, and installed services in their dwellings. This information entailed the concern to know who gets involved in the production of space and adaptation activities, the tools and rules they involve, the object and intended outcomes they expect, and the way duties and responsibilities (labour) are divided amongst the actors involved in the activities. Interviews were also conducted to explore the various factors influencing the actors' decisions while carrying out the production processes of urban space. Face-to-face interviews were used to collect information on the way dwellers utilise and manage the spaces they produce. The in-depth interviews addressed the questions "*How does the adaptation of informal spatial dynamics affect urban forms?*" and "*Why do governments adapt the informal spatial dynamics?*" The in-depth interviews offered a room for dwelling owners whose properties were affected by the adaptation activities to express their views. The researcher visited areas such as the respondents' homes, workplaces, or public spaces and asked questions face-to-face. Observations and mapping preceded interviews to collect information such as dwelling compounds, spatial compositions, house plans, and maps. The photographs, sketches, notebooks, and questionnaires (appendices seven to 10) were also prepared and used to record information from the in-depth interviews.

3.3.3 Surveys

3.3.3.1 Questionnaires

In this study, Quasi-structured questionnaires with multiple-choice questions were used to acquire experiences from professional public and private practitioners such as architects, engineers and planners. The tool was also used in collecting information from public officials like municipal planners, architects, and engineers. Here, the primary concern was gaining their views on the informal processes of production of space, and the reasons that the government adopts the informal spatial dynamics. Open-ended questions with partial pre-coding were used, as, according to Mathers et al. (2007),

“A problem with asking an open-ended question of lots of people is that it can produce lots of different answers, which can be difficult and time-consuming to code.....This can be partially solved by using an open-ended question with partial pre-coding”.

This study’s questions were open-ended but partially pre-coded to control the response volume and avoid the difficulty and time-consuming coding process. The partial pre-coding was achieved by using multiple-choice questions with some answer options (pre-codes) to choose from. Wherever necessary, the ‘other, please specify’ option was allowed to catch the response, which this study had not considered in advance. Questionnaires to the dwelling owners and the non-professional practitioners, like property brokers and local masons, were interviewer-administered, such that some of them had to be responded to orally. At the same time, the other responses were written in spaces provided in the questionnaires. Further, the interviewer-administered method was used for this group, as some could not write. The questionnaires for the professional public and private officials were self-administered, as the interviewees could read and understand the questions and respond to them accordingly by writing down their responses in the provided spaces within the questionnaires. The questionnaires to professionals were self-administered, whereas those for local government officials were interviewer-administered. This was done purposely to correct what was observed during the pilot study, where some local government officials wanted more elaboration and guidance in answering the questions. This situation was contrary to the professionals’ case. Table 4:4 summarises the objectives, questions, data required, and the associated techniques for collecting them, together with the sources of information.

3.3.3.2 Document review

A review of the documents was done to acquire background information on the non-physical context of the study site, such as the history or origin of a place, including its people, and the availability of social services. Program documents like CIUP, DMDP, and Dar es Salaam's Master plan of 2016 – 2036 contributed some information on the formal government spatial planning interventions in the form of programs that have taken place in the area and those planned to take place in the future. Context information included the history of a place, the socio-economic conditions of its dwellers, and the various factors (mainly external factors that are out of the control of the dwellers, such as political ideologies and project interventions) that influence developers' decisions during the production of urban form. This was also employed to acquire the context in which the informal spatial dynamics adaptation program takes place. This study also used document review to obtain information on the impacts of the adaptation of informal spatial dynamics on Dar es Salaam's urban form. Here, Google Maps was analysed to identify and record physical aspects of the settlements. The aspects recorded here were the settlements' size and location, layout and density, land uses that are functions of buildings, and unbuilt (public) spaces found in the settlement.

Table 3:6. Data collection matrix

S/N	Research objective	Research question	Variables	Sources of data	Method	Expected input	Expected output
1.	To determine the way people acquire land and organise space in informal settlements.	How do people acquire land and organise spaces in informal settlements?	- Settlement location, Plots, Buildings and Circulation paths	- Internet/Google - Case sites	- Physical observations	- Documentation tools	- Physical aspects of a place
			- History of a place	- Archives	- Document review	- Documentation tools	- Non-physical aspects of a place
			- Socio-economic conditions	- Indigenous - Reports	- Narratives - Document review	- Documentation tools	
			- System activities	- Dwelling owners	- Interviews	- Interview guide	The system of land acquisition and organisation of the place
			- Motive of the activities				
			- Actors involved,				
			- Rules engaged,				
- Labour division among actors							
2.	To examine various factors causing spatial changes in informal settlements.	What are the factors causing spatial changes in informal settlements?	- Factors	- Dwelling owners	- In-depth interviews;	- Interview guide	- Factors impacting developers' decisions
3.	To investigate the impacts of adapting the informal spatial dynamics on urban form.	How does the adaptation of informal spatial dynamics affect urban forms?	- Tolerated activities	- Dwelling owners	- Interviews	- Interview guide	- Tolerated
			- Adaptation system's activities	- Public sector officials like Municipal urban planners, architects and engineers; sub-ward officials like local leaders	- Interviews	- Interview guide	- The system used to adapt the informal spatial dynamics
			- Boundaries of the Adaptation				
			- Subsystems,				
			- Processes				
			- Relationships				
			- Feedback mechanisms,				
			- Common goals				
- Efficiency and effectiveness.							
- Affected plots, Buildings,	- Internet	- Physical observations;	- Documentation tools	- Impacts occurring on			
- Circulation paths	- Case sites						
4.	To examine the rationale behind governments' adaptation of informal spatial dynamics	Why do governments adopt the informal spatial dynamics?	- Reasons	- Public sector officials	- Interviews	- Interview guide	- Reasons to adapt the informal spatial dynamics
			- Reasons	- Private sector officials	- Survey	- Questionnaire	

Source: Author own construction, 2024

3.4 Reliability and internal validity

Burnard (2024) pointed out that improving the reliability of research can occur by creating a case study protocol and keeping a case study database. To guarantee the accuracy and dependability of the collected data and their corresponding methodologies, a case study protocol was developed for this study, which is considered a crucial strategy in mitigating threats to the reliability of case study research, as stated by Nguluma (2003). Nguluma (2003) stated that:

“Besides the case study protocol, and to address the reliability and quality of data collected, only graduate research assistants from the University College of Lands and Architectural Studies were engaged. Before actual fieldwork assignments, training was conducted with the research assistants to develop a common understanding of research issues, objectives, and methods. In training research assistants, all interview questions are scrutinised to have a common understanding and interpretation of all questions. Multiple sources of evidence are used to ensure validity. These include documentary sources, interviews, observation, and aerial photographs” (Nguluma, 2003).

Case study protocols consist of a summary of the study, field procedures, case study inquiries, and instructions for the case study report (Yin, 2009). In order to have a high-quality case study protocol, it was essential to have a competent field assistant involved in the study, as stated by Taherdoost (2021), who emphasises the importance of expert and trained teams for conducting case studies. Field assistants were exclusively architecture graduate-research assistants from Ardhi University (ARU) and Mbeya University of Science and Technology (MUST). The field assistants received training both prior to and during the field survey. The purpose of the training was to establish a shared comprehension of research matters, goals, and approaches. During the training of research assistants, all interview questions were carefully reviewed to ensure a shared interpretation and understanding of each question.

Additionally, various sources of evidence, including documents, interviews, observation, and satellite images, were employed to confirm the accuracy of the collected data. Utilising multiple sources helped to cross-reference evidence and create cohesive lines of reasoning. Triangulation, as described by Carter et al. (2014), is a research approach that entails combining various methods or data sources to enhance the depth of understanding regarding a research issue or to assess the accuracy of results.

3.5 Generalization

Generalisation of research results means the deliberate process of careful analysis and interpretation of findings from specific samples and then application of these findings to other populations and contexts (Younas and Durante, 2023). The use of mixed methods has been very helpful in facilitating the generalisation of the results of this research. The combination of methods allows researchers to address research questions in a comprehensive way and to extend conclusions and implications to a wider audience (Creswell & Creswell, 2018; Enosh et al., 2015; Sharma et al., 2023; Younas and Durante, 2023). As described in section 4.3, the selection of two cases for this study was based on a specific set of criteria which were considered to provide insight into the main focus of the study: informal spatial dynamics, its modifications and the impact of these modifications on urban structures. As regards this issue, the results of this research can be used, combined or extended to other circumstances with comparable criteria.

3.6 Data analysis and interpretation

Information was gathered via texts, stories, charts, visuals, and photographs. Information from the two case locations was gathered for this research. The data from both locations were examined and contrasted to identify commonalities and distinctions. The cross-case analysis was conducted to examine unique characteristics of individual cases, turn them into broad observations, connect them with existing theory, and analyse the results. Framework analysis was employed to examine descriptive data collected from the interviews and stories. This procedure was carried out in different phases. The data were examined using NVIVO version 12, a software for qualitative data analysis, through thematic analysis. The initial step involved getting acquainted with the data by transcribing and reading it. The surveys in this research were given in Swahili; therefore, the initial step in analysing them involved converting the responses into English and then into PDF, which is supported by NVIVO 12. The transcriptions were translated into English, then analysed as an entire dataset. The PDF scripts and videos were imported into an NVIVO-12 file. The key elements of the Cultural Historical Activity Theory (CHAT), namely, the activities, actors, tools, rules, community, distribution of labour, and motives, were used as pre-codes¹⁹ in the first cycle of the coding process. Some of the anticipated responses acquired from researchers' experiences, pilot study, assessment of

¹⁹ Pre-defined codes are codes that are established before or during the data collection phase, based on existing theories, frameworks, literature, or research questions. They are also called deductive, a priori, or theory-driven codes.

previous studies, and even guessing were put as nodes in cycle 2 of coding. The excerpts that fit the developed codes were then identified and attached to the codes created. The keywords were then searched through a query and displayed in tables and charts, which were used to complement the presentation of the results. Additionally, the data gathered on the components of the production of space activity systems was transferred onto activity triangles in order to identify the contradictions responsible for system alterations.

3.7 Methodological challenges encountered

This study faced certain restrictions. While conducting the empirical study in Mamboleo "B", it was observed that some residents, especially those living near the TAZARA railway, were involved in a land dispute with the TAZARA administration. The residents were reluctant to share details about owning land and the reasons behind how they acquired land and built their homes. Retrieving personal documents, such as land transaction contracts and property ownership documents, proved challenging during the TAZARA conflict because of their private nature and the amount of time needed. Much effort was put into persuading the participants that the researchers were not connected to the TAZARA officials. This indicates that just a limited number of contract samples were available for access. Scheduling interviews with particular residents required extensive follow-up efforts because of their packed agendas; a few interviews had to be held in the evening after work hours, while others were conducted during the day when participants were more available. Getting approval was also challenging, as the thorough interviews were carried out from one house to another. Approval had to be obtained from the local authorities, whose evaluation process was lengthy and caused delays in the work; therefore, once approval was given, the work had to be carried out at a high pace. A communication obstacle was present as well. In Tanzania, most people communicate in Swahili, so surveys and answers, especially from individual homeowners and non-expert workers such as local builders and real estate agents, were in Kiswahili. Thus, additional time was set aside for the translation of Kiswahili responses into English.

3.8 Ethical Consideration

Ethics are the ethical standards that dictate an individual's conduct. The term research ethics can be defined as acting in a morally and legally correct manner in research. They are essentially rules for behaviour that differentiate between what is right and wrong, as well as what is considered acceptable and unacceptable conduct (Showkat & Parveen, 2017). In this research, considerations based on the framework for ethical research, which represent the necessary

issues, were required for participants or respondents to address when the research was conducted. Since this research benefits society, it has to adhere to the interests, values, preferences, and confidentiality of the information from the participants. The research considered the balance of risks and benefits, providing skills and knowledge to society and hence improving their understanding. The research questionnaire was prepared to ensure that participants are treated with dignity, are involved in the research, understand the research, and are competent enough to decide to participate. Vulnerable participants were not involved. The information needed from the participants was related to the research aim, with little or no effect on privacy, and the participants were free to know how the results would be published or disseminated. Also, this study was flexible enough to notify participants of the findings as needed.

3.9 Summary

The fourth section of the report thoroughly explains the research methodology utilised to examine the creation and modification of space in informal settlements. This section commences with a comprehensive account of the mixed methods approach, integrating qualitative and quantitative research to ensure a thorough investigation. It underscores the importance of using descriptive and exploratory strategies to address inquiries regarding land acquisition, spatial organisation in informal settlements, and the influences behind spatial transformations. Furthermore, it delves into the intricate multiple-case study design, selected to gain a profound understanding of these dynamics within their authentic contexts, as defined by Yin (2009).

The research process outlined includes systematically gathering information from specific case locations. It involves using techniques such as interviews, observations, and document reviews to collect pertinent data comprehensively. The document details how each study location was chosen based on its potential to offer information-rich cases, which are crucial for thorough examination. This method enables the study to address questions about ‘what’, ‘how’, and ‘why’, offering a detailed comprehension of informal spatial dynamics and their adoption by governing bodies.

In addition, the section outlines the thorough measures implemented to guarantee the dependability and authenticity of the study, which involved creating a detailed case study protocol and enlisting skilled graduate research assistants. The strength of the methodology is apparent in its systematic approach to gathering and analysing data, ensuring that the findings

are well-founded and applicable to the contexts under examination. This comprehensive methodology reinforces the study's objective of revealing the complex processes of space creation and adjustment in informal settlements, offering valuable insights into urban planning and the development of policies.

PART TWO

EMPIRICAL FINDINGS

This part consists of chapters Four, Five, and Six presenting empirical findings. Chapter four describes the way urban space is produced through informal processes of land acquisition, and organisation of space in Mamboleo “B” and Kilungule “A” respectively. Chapter five avails the factors that influencing spatial changes in both settlements whereas chapter six presents the essence and approaches used by the government to adapt the informal spatial dynamics.

CHAPTER FOUR

4 THE SYSTEMS PRODUCING THE INFORMAL URBAN SPACES

4.1 Introduction

This chapter discusses the findings from Mamboleo “B” and Kilungule “A” settlements, which serve as case study locations. This study sought to examine the processes through which dwellers in informal settlements acquire land and organize space. The land acquisition and organization of space, are approached as systems and analysed using the Cultural Historic Activity Theory lens. The key aspects were to know systematically, the activities that comprised the systems of land acquisition and organization of space, the people who got involved in carrying out the activities together with the tools, and rules they employed. It wanted to know further, the motives of carrying out the activities and the way labour was distributed among the actors. Thus, the results are presented based on six scenarios which were set to execute inquiries for acquiring empirical data namely; the study area availing the location’s history, residents’ socio-economic conditions, living conditions, sense of connection to the place, and available social services. It also showcases the spatial aspects of its urban form, including the location and size of settlements, the layout of land uses and public spaces, and the image, identity, and buildings within the area; the activities performed; the actors involved; the motives behind the performance the activities; the tools used in carrying out the activities; the rules employed in performing the activities of making an urban form; and the distribution of labour amongst the actors performing the urban form making activities as follows;

4.2 The characteristics of the study areas

4.2.1 Location and sizes

Mamboleo “B” and Kilungule “A” are two notable settlements in Dar es Salaam, Tanzania, which exemplify the dynamics of urban expansion in the city (Figure 4:1). Mamboleo “B” is located within the Sandali Ward of Temeke Municipality, approximately 13.4 kilometers from the city center, and is characterized by its proximity to the Central Business District, which fosters diverse commercial activities and urban development. The settlement spans about 130,051 square meters and had a population of approximately 5,200 in the 2012 Census, projected to rise to around 7,072 by 2024²⁰. Geographically, Mamboleo “B” is bordered by the

²⁰ Projection of 3% increase per year after interview with Mr. Amos of the National Bureau of Statistics in 2024

Mpogo River to the north and east, the TAZARA railway to the west, and a connecting road to Mamboleo “A” to the south. In contrast, Kilungule “A,” situated in the Kimara Ward of Ubungo Municipality, lies about 13.5 kilometers from the city center along Morogoro Road, which significantly influences its growth and accessibility via the Bus Rapid Transit (BRT) system. Bordered by the Kilungule River and neighboring settlements, Kilungule “A” functions as an informal settlement and features a layout akin to a district. Both settlements reflect the socio-economic transformations within Dar es Salaam, with Mamboleo “B” transitioning from government-owned land to private development, while Kilungule “A” exemplifies the challenges and opportunities presented by rapid urbanization.

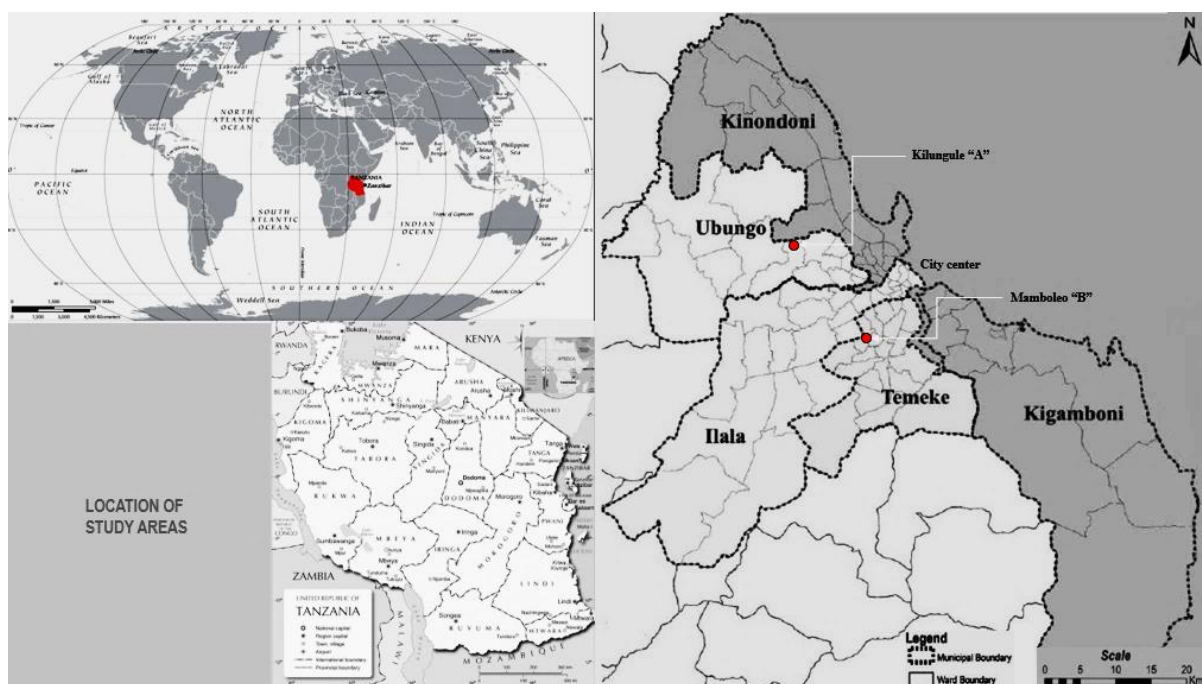


Figure 4.1. Location of Kilungule “A” and Mamboleo “B” settlements in Dar es Salaam city
Source: Adapted from SmartAKIS (2018)

4.2.1 Spatial characteristics

Mamboleo “B” settlement’s layout is of irregular type with winding streets and paths (Figure 4:2). A more considerable portion of this settlement comprises densely packed buildings of varying physical qualities, functions, and delivery modes. This area accommodates buildings of varying functions and physical qualities such as sizes, architectural styles, and finishing materials. Land uses are of mixed type and comprise buildings of varying functions such as residential, commercial, industrial, agricultural, and others. There are no specified density zones like medium, high, or low densities in this place; tiny plots of up to 46m² exist together with the bigger ones of up to 417m². There are no specific public areas designated for use. Individuals gather and form connections in vacant areas amidst buildings, personal gardens, local stores,

and small stands. Private individuals own the unbuilt spaces, though they accommodate public activities. Public access to privately owned spaces depends on negotiations and chemistry between the public and private parties. In contrast, Kilungule “A” accommodates plots of varying shapes and sizes and winding streets and circulation paths (Figure 4:3). There are no specific density zones in this area, such as medium, high, or low-density zones. People gather and interact in unbuilt spaces between buildings, private yards, corner shops, and kiosks. These unbuilt spaces temporarily serve as public spaces. Some of the well-known public spaces in this place are the open spaces located under the high-tension electric grid line. The land uses are mixed, with buildings serving various functions, including residential, commercial, industrial, and agricultural purposes. This settlement is divided into two zones based on its history. Zone I, also known as the *‘Indigenous zone’*, is located on the northwestern side of Kilungule “A” (Figure 4:3). The majority of the buildings in this settlement are densely packed together. Dwellings in zone I are not fenced, making the area more permeable. Private spaces in this zone accommodate public activity depending on negotiations and chemistry between the public and private parties. Zone II (the remaining), also known as the *‘Foreigners zone’*, is less permeable than the rest of Kilungule ‘A’ areas. Most of its dwelling compounds are fenced, making the unbuilt spaces less accessible and attractive to the public. The zone consists of well-maintained buildings that are sparsely distributed.

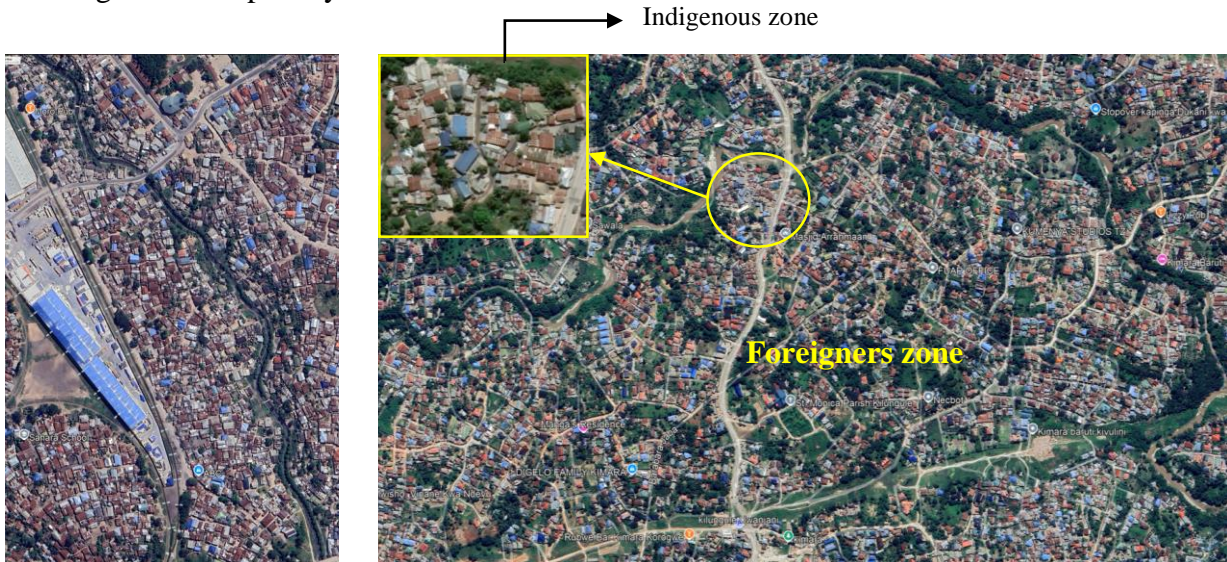


Figure 4:2. Mamboleo “B” spatial structure
Source: Google Imagery, 2024

Figure 4:3. Kilungule “A” spatial structure showing the indigenous and the foreigners’ zones
Source: Google Imagery, 2024

Kilungule “A” is a place that is always evolving. It had developed into a settlement even though no one had intended for it to do so. The original settlers arrived in the area around 1905 in search of a fresh start as farmers, but since then, more people have moved in, constructed

homes, and the town started to expand. The roads that were first built for farming quickly evolved into streets that connected the various economically significant areas. Buildings were constructed in line with the streets as the settlement expanded, giving it a feeling of structure and order. Later in 2000, the government sought to begin controlling spatial developments in urban areas including Kilungule "A". In the year 2000, the Kinondoni Municipal Council (KMC) was created as an independent body by the government notice No. 4 issued by the local government, regional administration, and the president's office. Kilungule "A" became one of the sub wards under the jurisdiction of Kinondoni Municipality. The municipal council authority of Kinondoni started ensuring that urban planning regulations be applied to the spatial development of every settlement under its jurisdiction. This was not limited to planned communities. It was expanded to include Kilungule "A" and adjacent communities. In 2006, the government launched the residential license formalization program. Building permits, albeit in a more relaxed way, were introduced as a tool to control spatial developments in informal settlements, even though they are inappropriate there. At the moment, Kilungule "A" is gentrifying as affluent people buy land and buildings from the original residents. Government involvement through redevelopment projects were also undertaken to improve the settlement's infrastructure and connectivity to other parts of the city. The Dar es Salaam Metropolitan Development Projects is one of the projects which encompass these initiatives. DMDP, among other infrastructure improvement projects, involved tarmacking and widening of Kilungule Road to increasing accessibility and connectivity to other parts of the city, including Dar es Salaam's central business district.

4.2.1 Settlements' historical developments

The history of this area shows that it was first inhabited by Zaramo (indigenous inhabitants of Dar es Salaam) people and refugees from tribespeople called Makonde Maraba (originally from Mozambique)²¹. This settlement rests on what used to be government land, which later fell into the hands of private developers who, by that time, were mostly local peasants. During interviews with some long-lived residents, it was observed that the so-called Operation for Establishment of Corporate Villages of the 1970s was a significant force driving many newcomers, particularly the long-lived ones, to this place located along the Independence Railway (TAZARA railway). This campaign, among others, required people to stay along the railway to guard against vandalism and sabotage. According to Monsoon (2009),

²¹ <https://www.globalgiving.org> > pfil > projdoc

Operation ‘*Kando Kando ya reli*’ was comparable to the ‘*Ujamaa*’ villagization initiatives underway at the time in other parts of independent Tanzania. But in other respects, it was distinct. It was anticipated that the families living along TAZARA would serve as both railway security and rural producers. The physical presence of village settlements served as a deterrent against possible enemy sabotage. The village people were entrusted with the task of monitoring and instructed to report any suspicious activity or strangers. This resulted in many people from other parts of Dar es Salaam flocking to settlements located along the TAZARA railway, with the Mamboleo “B” settlement being among them. During a conversation with one respondent²², the following is what she said;

“I arrived here in 1975 with other people, mainly from the Unubini area in Temeke district. Our decision was fuelled by the speech we heard from the Tanzania Broadcasting radio station. Honorable Rashid Mfaume Kawawa delivered this speech, the prime minister under the first government of independent Tanzania led by the late first President Mwl. Julius Kambarage Nyerere. This speech required people to establish their settlements alongside the Independent Railway (TAZARA). This was a campaign to guard our independent railway against vandalism and sabotage. During that period, the whole area was the property of one Arab-origin resident. I, together with other people who came later, bought our land pieces from this Arab. The size of the portion bought mainly depends on our purchasing power. Those who had high purchasing powers acquired big portions as compared to us.” – Ms. Nandenga interviewed in the year 2020

In contrast to Mamboleo “B”, Kilungule “A” was a vast, lush forest owned by the Zaramo people. Generations of their ancestors had lived on this land, thriving off its resources and living in harmony with nature. However, as time passed, the forest began to shrink, making way for modern developments. During an interview with Mr Puluku, a long-time resident of the settlement, he shared the history of this place. It was revealed that, around 1905, a Matumbi tribe farmer named Halfani Mohamed Nkyemae came to establish a farm here. After his passing, the land was inherited by Mr. Puluku, who arrived in 1939 when he was just 12 years old. As more people from different tribes began to migrate to this area in search of affordable agricultural land, Mr. Puluku and his family began to subdivide and offer portions of their land for free. They did this to encourage newcomers to stay with them, as they felt lonely in this isolated place. The settlement's original name was Mtoni, but in 1918, it was changed to

²² Bi Nandenga interviewed in the year 2020

Kilungule. Mr. Puluku explained that the name ‘Kilungule’ originated from the Zaramo word ‘*Kalukula*’, which means burnt. He went on to tell the story behind the name of a young woman called ‘*Mwali*’ who was tragically burnt alive in her house while trying to prepare porridge. Her spirit was said to haunt the area, and her story was passed down through the generations. Despite the changes and developments that have taken place, the people of Kilungule still hold on to their roots and traditions. As the years go by, they continue to welcome new settlers with open arms, making this place a melting pot of different cultures and communities.

4.2.2 Community services available

Mamboleo’s “B” sub-ward generally faces a shortage of social services such as education, health, and energy. On the side of energy, the area lacks a reliable water supply. During interviews with respondents in this area, it was observed that 23 out of 26 get water from one borehole, two Community-Based Organisation (CBO) water kiosks, and one municipal well with a hand pump found in the area. Mamboleo “B” sub-ward has a reliable power supply. During interviews with dwelling owners in this area, 22 out of 30 interviewed dwellers connected power to their dwellings, with TANESCO being their service provider. TANESCO is the major electricity service provider in this place. Health facilities include the Muzdalifah Islamic Charitable Organization (MICO)²³ private dispensary found in Mamboleo “A” sub-ward about 0.5 km from this settlement. However, a new dispensary called Tanzania Youth Muslim Association (TAYMA)²⁴ dispensary is currently in operation. Residents of this place also acquire health services from Temeke Public Hospital, located about 2.4 km from Mamboleo “B”. In this area, there are also no public schools. Kids attend Sandali public primary school located in Sandali ward, approximately a quarter of a kilometer away from the settlement. Sandali Primary School is located in the Usalama sub-ward of Sandali ward, about a quarter of a kilometre from the Mamboleo “B” (Figure 4:4). Security of people is improved by the presence of a police post located about 0.5km from the south-western edge of this settlement. In terms of sanitation, dwellers in this area mainly use pit latrines. This is done by using water closets instead of a mere hole, which was common in the past. Maguruwe Market, located in the Tandika ward, about 1.5 km from this area, serves this area.

²³ Private, Faith Based Organization (FBO) –Sunni (<https://hfrs.moh.go.tz/web>)

²⁴ Private, Faith Based Organization (FBO) –Sunni (<https://hfrs.moh.go.tz/web>)



Figure 4:4. Map of social services in Mamboleo “B” settlement and its vicinity

Source: <https://ramanihuria.org>, 2022

In Kilungule “A”, there are three mosques (Arrhaman, Kahera and Swabirini) and two churches, namely St. Monica Catholic church and Nazareti – KLPT church Figure 4:5. People in this area acquire health services in one dispensary, namely Kilungule Dispensary (Figure 4:6). There is no kind of school, be it primary or secondary. Dwellers depend on such services from nearby sub-wards. Kilungule “A” sub-ward has reliable piped water, particularly in the ‘foreigners’

zone'. In the 'indigenous' zone' there is a shortage of water as many dwellings are not connected to the main supply. This situation has attracted the water vending business in the area. Figure 4:7 Shows water reservoirs (sim tanks) at Mr. Chichulo's house. This is among the major private water vendors in this place. During interviews, it was observed that 28 out of 30 respondents owned houses connected to water supply, with DAWASCO being their major service provider. Kilungule "A" sub-ward has a reliable power supply. TANESCO is the major electricity service provider in this place. However, many houses have not connected the power in their houses. During an interview with respondents in this area, it was observed that 25 out of 30 dwellers connected power to their dwellings.



Figure 4:5. Nazareth KLPT church.
Source: Author field observations, 2021



Figure 4:6. Kilungule "A" dispensary.
Source: Author field observations, 2021



Figure 4:7. Reservoirs for private water vending business in Kilungule "A"
Source: Author field observations, 2021

4.2.3 Dwellers' socio-economic conditions

Mamboleo "B" accommodates people of varying levels of income. However, according to Materu & Mkanga (2006), most households' primary income sources are petty trading and paid employment in public or private institutions. Petty trading mainly involves foodstuffs and domestic consumables such as rice, flour, soap, and cooking oil. Some individuals, primarily males, engage in selling used clothing, crafting and fixing shoes and garments, repairing vehicles, vending water, running small welding shops, or creating furniture for local sales. A few women engage in stitching, decorating fabrics, weaving mats, making clothes, vending food on the streets, and brewing traditional beer. This area also accommodates people of varying tribes. During an interview with one of the *Mtaa* leaders,²⁵ it was realized that the settlement accommodates tribes such as Makonde, Zaramo, Ndengereko, Ngoni, Chagas, and Pare. In contrast, Kilungule "A" was originally occupied by peasants who were people of low income status. Due to the rise in land values and increase in population in this area, land became scarce, and these original farmers began to shift their occupations to others, mostly business. During an interview with the *Mtaa* Executive Officer (MEO),²⁶ it was also realised that this

²⁵ Mwamvita Mzuzuri interviewed on...2021

²⁶ Joshua Gyunda interviewed in the year 2020

settlement is now diversified. It accommodates people of varying economic statuses and occupations. According to Manara (2020), communities of Kilungule “A” are, to a large extent, part of the middle class income. This level of income of the dwellers of this area are also spatially reflected in relatively larger plot sizes and good-quality housing that are increasingly being built in the area (Manara, 2020).

4.3 Land acquisition and space organization activities

In both places, Mamboleo “B” and Kilungule “A”, the processes of production of space involved the key activities namely; land acquisition and organisation of space. Land acquisition involved five sub-activities or exercises. The first exercise was to select a suitable location in the city. Land seekers aimed at finding suitable sites within the city limits where they could build dwellings for the purpose of housing, with some urban farming activities. The second activity related to the acquisition of land was the gathering of information on available land markets. This was done in order to know the land parcels available on the market in the land seekers’ areas of choice. The third activity involved carrying negotiations of land transactions between land sellers and their potential purchasers. The purpose of the negotiations is to enable the parties to reach an acceptable price for both parties. The fourth activity was to define the plots by drawing boundaries around each plot. The fifth activity was the transfer of land titles. This was done so that the potential purchaser can acquire the extra legal status of ownership of the new land.

The space organization process involved seven activities. The first activity was to define the plot boundaries. This activity is discussed further as land subdivision activity in section 1.6 of the rules involved in carrying out the activities. The second activity involved creating pathways to enhance accessibility and connect the area with neighbouring locations. In the third activity, new dwellings were constructed, a practice dating back to the initial indigenous settlements. Upon acquiring land, some landowners in both areas constructed homes for residential use. However, priorities varied between the settlements. In Mamboleo “B,” residents were required by the Tanzanian government to build homes along the TAZARA railway to safeguard it from vandalism. Ms. Nandenga, who built her house in 1975, noted that:

“Apart from agriculture, the government required us to build houses and reside here to guard our independent railway against vandalism and sabotage, which was common at that time.”

While constructing a dwelling was a priority, the *Ujamaa* policy also linked housing with agricultural land, meaning landowners had to prioritize both. Over time, Mamboleo “B” became densely built-up, leaving no space for farming, and attracting people seeking rental houses or existing buildings for replacement. In contrast, in Kilungule “A,” agricultural land was the primary concern for most residents. Dwelling construction was secondary, as many people lived in other parts of the city, either as renters or homeowners. For example, Mr. Mwakilasa mentioned in an interview that when he moved to Kilungule “A,” he already owned a home in the Kinondoni area in Dar es Salaam city, so his initial focus was on building a small farmhouse, which he later expanded incrementally to reach the current status of a complete three-bedroom house.

The fourth activity involved extending starter houses or adding new houses on a plot to form a dwelling compound. Residents in both areas expanded their original homes or added additional units to accommodate increased family members. Unstructured interviews and Google Maps analyses revealed that, some dwelling compounds in both settlements had grown over time, incorporating more family members such as uncles, aunts, nephews, and grandchildren. In Kilungule “A,” this process often began with the construction of a farmhouse, followed by expansions to serve new functions or provide rental housing. The fifth activity was the disposal of land parcels, which brought more people to the area, forming housing clusters under different ownership. Land disposal occurred through sales, inheritance, or gifts. For instance, in Mamboleo “B,” a housing cluster emerged after Mr. Mwimba divided his land among his sons as an inheritance. In Kilungule “A”, landowners often sold undeveloped land after constructing starter houses, attracting new residents and forming clusters. On-site observations and interviews revealed that some landowners subdivided their land into smaller plots and sold them individually to other buyers.

The sixth activity involved controlling access to spaces. As more people moved into Kilungule “A”, there was a growing need to regulate access to dwelling compounds and unbuilt spaces, such as setbacks and undeveloped parcels. This control typically emerged once residents had settled and established relationships with their neighbours. In the indigenous zone, most dwelling compounds remained unfenced, maintaining a more open environment.

The seventh activity involved the installation of services in constructed dwellings. It was done to bring the services close to residence and hence serve time that could be lost by seeking the same far from these places. During the site visit in Mamboleo “B”, it was noted that, there are

no government water service infrastructures. Residents rely mainly on privately managed boreholes and one shallow well with a hand pump constructed by Temeke Municipal Council. The interviews carried out revealed that 23 out of 26 dwelling owners get water from the boreholes. Mamboleo “B” sub-ward has a reliable power supply. The Tanzania Electricity Supplying Company (TANESCO) is the major electricity service provider in the area. However, there are still some houses which are not connected to the service. During an interview with respondents in Mamboleo “B”, it was observed that about 22 out of 26 dwellers have connected power to their dwellings.

4.4 Actors involved in carrying out the activities

The indigenous populations of Mamboleo “B” and Kilungule “A,” along with other individuals seeking land, played a central role in land acquisition activities in these areas. The decision on urban location largely rested with these land seekers. However, in Mamboleo “B,” the government, through the TAZARA administration, influenced this process by encouraging people to settle along the railway to protect it from vandalism and sabotage in the 1970s. The initial land seekers, who became the indigenous residents of these areas, were predominantly from outside Dar es Salaam, although over time, the areas attracted people from other parts of the city. In Mamboleo “B” the original settlers were primarily Makonde people from Mozambique. Following the government’s push for settlement along the TAZARA railway in the 1970s, other groups, notably from the Unubini area and parts of Dar es Salaam, began moving into the area. According to Monsoon (2006), the government used both political and economic methods, to persuade people that by living close to TAZARA they would have access to new sources of economic security. In exchange for guarding the railway, the villagers were promised that they would receive improved services from the government, including water, healthcare, education and agricultural support. In contrast, Kilungule “A” did not experience government intervention in land choices, with decisions about where to live entirely left to the land seekers themselves. The government had no role in shaping these decisions. People voluntarily migrated to Kilungule “A” in search of land for agricultural purposes. The indigenous population of this area consisted of Zaramo and Matumbi people, attracted by the availability of affordable land suitable for farming. Over time, individuals from other parts of Dar es Salaam began moving to the area, initially seeking agricultural land, although many later shifted their focus. Some of these newcomers, owning large land parcels, began subdividing and selling their land to other new arrivals.

The search for information on land markets was typically the responsibility of the land seekers themselves. They were largely independent in acquiring land market information, though some did employ private sector professionals such as brokers, friends, and sub-ward officials to assist in the process. Interviews with dwelling owners in Mamboleo “B” revealed that 10 out of 13 informal private sector practitioners had previously gathered land information on behalf of their clients (the land seekers). Information about land availability was not centralized but came from a variety of informal sources, including friends, relatives, local government officials, brokers, and even land sellers themselves. Interviews with homeowners in Mamboleo “B” indicated that 23 acquired land information through personal contacts, 2 from property brokers, and 1 directly from the seller (Table 4:1). In contrast, land information in Kilungule “A” was typically obtained directly from the land sellers. Interviews with 30 landowners in Kilungule “A” showed that 22 received information from the sellers, 4 from personal contacts, and 1 from government officials at the sub-ward level (Table 4:1).

Table 4:1. Sources of information on land under disposal

Factors	Mamboleo “B”		Kilungule “A”	
	Number of selections	%age of selections	Number of selections	%age of selections
1: Direct from owner	1	3.8%	22	81.5%
2: Through sub - ward government	0	0%	1	3.7%
3: Through people I know in this area	23	88.5%	4	14.8%
4: Through property brokers	2	7.7%	0	0%
Total	26	100%	27	100%

Source: Author field survey, 2021

Negotiations of land transactions in both Mamboleo “B” and Kilungule “A” primarily involved buyers and sellers, who were the main participants in the process. In some cases, one or both parties enlisted the help of family members, friends, or brokers to assist with the negotiations. Interviews with unprofessional private sector workers revealed that 10 out of 13 were involved in informal land transaction discussions, representing both parties. The subdivision of land was carried out by landowners, each with their interests, requirements, and preferences, who marked out plot boundaries. Nearby residents and local government representatives often acted as observers during this process to help prevent potential boundary disputes. Additionally, land sellers and buyers played key roles in the transfer of land ownership. Local leaders or individuals agreed upon by both parties served as witnesses to confirm the legitimacy of the seller’s ownership. These witnesses were also involved in dispute resolution if land transfer disagreements arose. The sub-ward government office validated informal property transfers and held sales contracts. Interviews with public sector officials indicated that all 13 (100%)

interviewed officials had at least once participated as witnesses in the informal transfer of land rights.

In both settlements, land sellers were crucial in identifying and marking the boundaries of the land parcels they sold. This activity took place in collaboration with buyers and other witnesses involved in the transaction process. Circulation paths were formed through a combination of human activity and natural forces, such as rainwater. People who needed to move between different locations were the ones creating circulation paths. Interviews with long-term residents revealed that rainwater runoff contributed significantly to the development of paths in Mamboleo “B” as drainage channels became adopted as circulation routes. In Kilungule “A”, over time, pastoralists, farmers, and the government were involved in improving and constructing roads in these areas.

The actors involved in the construction of dwellings varied depending on the developer’s wishes and the type of structure being built. However, key actors included the plot owners themselves, local masons, material suppliers, and unskilled labourers. Plot owners had the freedom to choose whom to engage in construction activities based on their preferences, financial status, and needs. Unlike formal settlements, there were no requirements to hire professionals such as contractors, engineers, or architects. The involvement of experts depended largely on the developer’s financial capacity and the nature of the house being constructed. In both Mamboleo “B” and Kilungule “A,” plot owners, local masons, and material suppliers were essential participants in the construction process. Interviews with dwelling owners in Mamboleo “B” revealed that 21 out of 26 (80.77%) dwelling owners were involved in all stages of construction, preparing drawings and building their homes themselves. Other stakeholders, including brokers, municipal authority officials, and professionals such as architects and planners, acted as mediators in some cases, offering advice on cost reduction, building design, and material selection. However, only two landowners (7.69%) in Mamboleo “B” reported engaging architects in the construction of their homes. Similarly, interviews in Kilungule “A” indicated that 28 out of 30 landowners built their homes without the involvement of technical experts. Construction took place either with the assistance of professionals in the initial stages, such as for drawing preparation, or through the efforts of landowners and local masons without external technical expertise. Interviews showed that only three landowners engaged architects, while 12 involved local masons and 16 constructed their homes independently, relying solely on unskilled labour (Table 4:2).

Table 4:2. Involvement of experts in construction

Experts involved	Mamboleo "B"		Kilungule "A"	
	Number of selections	%age of selections	Number of selections	%age of selections
1: No expert involved	21	80.77%	16	51.6%
2: Local masons	3	11.54%	12	38.7%
3: Architect	2	7.69%	3	9.7%
Total	26	100%	31	100%

Source: Author Field Survey, 2021

The control of access to space, was managed differently depending on location. At the dwelling compound level, landowners themselves were responsible for controlling access. However, when it came to circulation spaces, such as pathways between adjoining buildings, neighbouring property owners collaborated to control access to spaces. This control was often exercised by the owners of unbuilt spaces. Service installation primarily involved the dwelling owners, service providers like the Dar es Salaam Water and Sanitation Company (DAWASCO) and Tanzania Electricity Supply Company (TANESCO), and local administrative officials, including *Mtaa* Executive Officers (MEOs) and the sub-ward chairman.

In addition to direct actors, other stakeholders were indirectly involved in the production of space in both Mamboleo "B" and Kilungule "A". The involvement of other stakeholders in construction decisions was partially within and partially outside the control of developers. Formal institutions like the Ubungu and Temeke Municipal Planning Authorities intervened to regulate spatial development, while neighbours and passers-by often offered voluntary advice. Further, the decision to engage professionals such as architects, engineers, planners, and contractors remained at the developer's will. Stakeholders like brokers, municipal authorities, and formal practitioners, including architects and planners, indirectly influenced the construction process. These actors shaped developers' decisions by offering pieces of advice on matters like cost-saving strategies, as well as spatial aspects like building size, shape, and material selection.

4.5 Motives for carrying out the activities

Different developers had different reasons for carrying out the tasks involved in creating an urban form. In both situations, people initially required land for residential housing and agricultural uses. In contrast to the residents of Mamboleo "B," who were drawn to the area for political reasons, the people of Kilungule "A" were drawn by the availability of suitable land for agricultural purposes only, while the land in Mamboleo "B" was primarily used for residential accommodation over time. In particular, the indigenous people in Mamboleo "B"

were motivated to build their dwellings close to their Independence (TAZARA) railway in response to the government's call to do so in order to guard the railway against vandalism and sabotage. Later on, though, people started looking for land for both residential housing and agricultural use, the primary goal of land ownership in this area these days is residence. Some landowners construct homes for their own use, while others do so for rental purposes. Some, like Mrs. Komba, chose to divide the remaining land and sell it to those in need after purchasing their land parcels and constructing their homes with auxiliary structures like storage buildings. They looked for suitable locations inside the city limits to build housing that combined urban farming. The goal of transaction negotiations was to assist the parties in arriving at a reasonable price that satisfied them both. Plot boundaries in informal settlements are drawn to indicate the spatial extent of individual ownership claims, just like in planned areas.

Plot boundaries were established to create land ownership and avoid future disputes over them. Building pathways to increase accessibility and link this area to other places was the second task in both areas. The landowners and other users of the circulation paths created them in an unplanned manner with the intention of gaining access to their farms. Prior to starting other rental home construction projects, the developers of Mamboleo "B" constructed residential homes for their families to live in. It was noted during observations and interviews that buildings were initially intended for use as residential housing. Over time, the owners of the homes, particularly those along busy access roads, started converting some of the rooms to serve as shops or other commercial spaces in order to meet the growing demands of the economy. The landowners in Kilungule "A" initially constructed farmhouses or shacks to hide from the rain, strong sunlight, or brief rests while farming. Eventually, homes were intended for private residential housing and/or rental. The area's farmhouses have been replaced by permanent homes, which started to appear in the 2000s as land values started to rise and there was a growing shortage of land for residential use in the city. The landowners started to build permanent homes and divide their farms into plots. In the foreigners' zone, people construct high-quality, contemporary homes for private or rental use while residing in the compound or other settlements. Whereas the foreigners' zone was intended for rental use, with some also being used for private residence, the Indigenous zone's residences were primarily intended for private living. Some started building residential homes with auxiliary features like outdoor kitchens, pit latrines, and outdoor storage spaces. Some buildings that were once used for residential housing are now being converted to serve as shops, kiosks, or even rental units. The main goal of space access control was to improve security in residential complexes and the

settlement as a whole. In the course of speaking with the daughter of Mr. Nangonga and her mother, Mrs. According to Nangonga in Mamboleo "B," they chose to erect the gate for security reasons in order to curb small-time theft. Selling off land to build more homes and residents was primarily done to draw more people to the area, improving security and making the community livelier. However, the selling was mainly done to deal with the financial issue.

4.6 Tools employed

Various tools were used to carry out the land acquisition and plot development activities to facilitate the making of urban forms. In the creation of circulation paths, hand tools like hoes and slashers were used. In searching for suitable locations, the land seekers relied on others' experiences and ideas on factors like accessibility, utility connections, social services, sociability, and more. Funds or money, time, and data, were also needed and utilized in the investigation of land market information. For instance, individuals who hired land brokers to assist them in searching for information on available land plots had to compensate their brokers with a fee equal to 10% of the land's selling price. To make negotiations easier, all you need is time and the ability to persuade. The plot boundary delineation activity involved tools such as time, ideas on the activity itself, a piece of land, and other tangible objects like trees and hedges to mark the boundaries. Originally, naturally occurring or artificial physical objects like trees, stones or circulation paths were being adapted as markers of plot boundaries. Nowadays, the plot boundaries are defined and emphasized by artificial elements trees, hedges, tires and fence walls to mark the boundaries. The land parcels which have undergone the process of tenure regularization are normally planted with beacons. In Mamboleo "B", the physical surveys discovered second-hand tires, bush poles, hedges, and foundation walls being utilized to designate plot boundaries (Figure 4:8 (a), (b), and (c). However, in crowded areas where boundaries are not clear, the imaginary line between the eaves of houses was used as plot boundaries. The physical surveys in Kilungule "A", revealed beacons and fences being used to delineate plot boundaries, particularly in the foreigners' zone whereas beacons and hedges in the Indigenous zone.

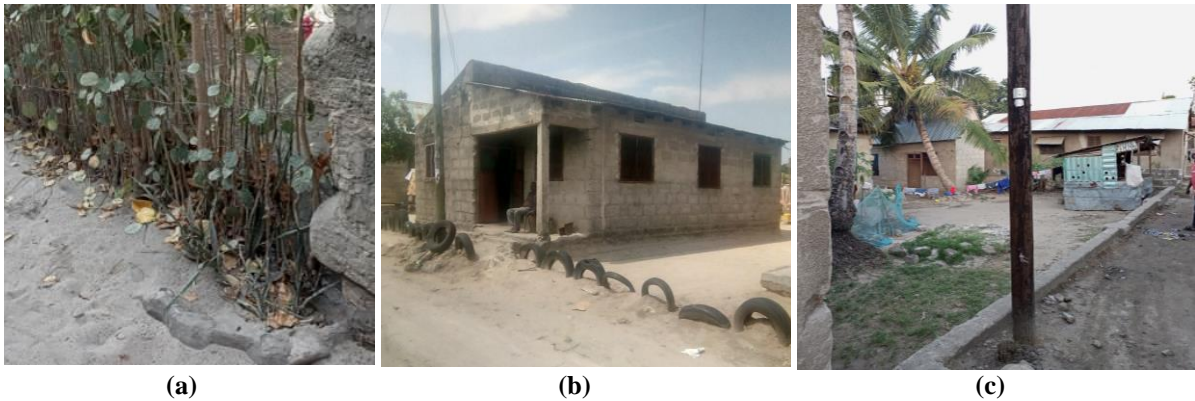


Figure 4:8. Physical objects used for making plot boundaries in Mamboleo “B”.
Source. Author, 2023

The Sales contract form ²⁷ (Appendix 19) acquired from the local government office at the sub-ward level or a sales letter prepared and agreed upon by both parties, plays a major role in facilitating the land ownership and transfer process. Formal tools like residential licenses and certificates of right of occupancy are also used to legalize land ownership though they are not necessary in both cases. During interviews with the dwelling owners in Mamboleo “B”, it was observed that only one resident out of 26 interviewed dwelling owners had formal title to his land. In Kilungule “A”, it was observed that 26 out of 30 had no certificates of right of occupancy CROs or residential licenses RLs. In creating circulation paths both natural and artificial tools were involved. Natural agents include rainfall and animals whereas artificial tools include hand tools like hoes and slashers and nowadays road construction tools are involved in the creation of circulation paths. The physical observations in Mamboleo “B” revealed two circulation paths that began as surface rainwater drainage channels. The paths were later adopted as circulation paths and rainfall drainage channels. This study also discovered some circulation paths in Kilungule “A” which originated by adapting the paths that were being used by pastoralists to move their cows from Kimara - Mwisho to Pugu areas of Dar es Salaam city.

To facilitate dwelling construction activities, developers needed land pieces, finances, construction materials and ideas. Developers were obtaining construction funds from various sources. In Mamboleo “B”, 92% of the interviewed dwelling owners earn their living from petty trading activities such as the selling of second-hand clothes, shoes and agricultural produce. Others were also obtaining funds from loans or assistance from their relatives and friends. Formal approval documents like building permits were not a must at this place. They were involved or not as per developers’ wishes and financial capabilities. During interviews with

²⁷ Sales contract form is translated in Swahili as ‘*Hati ya mauziano*’

dwelling owners in Kilungule “A”, it was observed that only 1 of 30 interviewed dwelling owners had a building permit from Ubungo municipality. Most of the developers were failing to afford the cost of owning a building permit. For example, building permit application fees range from 150,000 to 350,000/= Tanzanian shillings, depending on the nature of the building design submitted with the application letter. It was also observed that 1 out of the 30 dwelling owners used local permits, which are issued by the local government administration at Kilungule “A” sub – ward and 28 out of the 30 respondents have never used any permit (Table 4:3).

Table 4:3. Use of building permits in Mamboleo “B” and Kilungule “A”

Factors	Mamboleo “B”		Kilungule “A”	
	Number of selections	%age of selections	Number of selections	%age of selections
1: No permit	10	38.46%	28	93.4%
2: Used local permit	16	61.54%	1	3.3%
3: Formal building permit	0	0%	1	3.3%
Total	26	100%	30	100%

Source: Author Field Survey, 2021

Building materials were also required to facilitate construction activities in both areas. However, the quantity and quality of materials to be used in construction were not limited; rather, they were determined by the developers' requirements, tastes and financial resources. Unlike in formal settlements, where building regulations apply, there was no restriction on the quality of construction materials used in the building. Interviews with the natives²⁸ of Kilungule 'A' revealed that the houses were mainly thatched roofs made of daub and wooden sticks. Depending on the developers' tastes and financial means, some included architectural blueprints and experts, others did not. There were no restrictions on their use, so residential construction proceeded whether they had a pre-planned plan or not. In the first scenario, the land owner may engage a professional, such as an architect, planner, engineer or local bricklayer, to draw up plans before the construction of the land. In the latter scenario, the owner or others, such as family members or local bricklayers, exchange ideas during construction. Interviews with landowners in Mamboleo B revealed that 73.08 % of them did not use expertly prepared plans or blueprints, but rather the building design developed during construction (Table 4:4). In Kilungule “A”, 17 out of 30 owners used their own designs for their dwelling units during the construction process, rather than using professionally prepared blueprints or drawings. One in every 30 respondents used drawings by architects, while 12 used drawings by local masons.

²⁸ Mr. Puluku interviewed in the year 2022

During the construction work, local masons were observed using their main tools, which included building lines, floor levels and building blocks.

Table 4:4. Number of developers using construction drawings

Tool involved	Mamboleo "B"		Kilungule "A"	
	Number of selections	%age of selections	Number of selections	%age of selections
1: Drawings by developer	2	7.69%	0	0%
2: No drawings used	19	73.08%	17	56.67%
3: Drawings by Local masons	3	11.54%	12	40.00%
4: Drawings by Architects	2	7.69%	1	3.33%
Total	26	100%	30	100%

Source: Author field study, 2021

4.7 Distribution of labour amongst the actors

Division of labour amongst the actors depended on the nature of the activities and was not fixed as the case could be in the formal system where the duties and responsibilities of the actors like the technicians, supervisors, labourers, and masons are stipulated within their contracts and regulations. In this place, any actor may assume duty based on his capability and agreement with the client and the local mason. In acquiring land, in interviews with the real estate agents, they all mentioned that providing information on land markets is one of the main services they offer their clients in this area. During discussions with the *Mtaa* executive leader, it was observed that the sub-ward officials are responsible for verifying information provided, especially regarding land ownership, when required, as transfers of ownership are facilitated through a sales form prepared by the sub-ward office. In a conversation with the *Mtaa* chairperson, it was disclosed that details like ownership and dimensions of every land plot in Mamboleo "B" can be found at sub-ward government offices. The people seeking land were the ones who started and financed the project. On the other hand, individuals such as real estate agents, family members, and friends were helping potential land buyers by providing them with helpful information. In negotiating land transactions, the seller sets the price and payment options for the land, while the potential buyer must either agree to or negotiate the price. In interviews with public sector officials, it was discovered that all officials participate in plot demarcation to confirm the locations and ownership of plot boundaries and prevent conflicts with neighbouring plots. In interviews with inexperienced private sector professionals in Mamboleo "B", 9 out of 13, or nearly 69.23%, participated in plot demarcation tasks. 6 out of the nine individuals were occupied with resolving issues related to plot boundaries, whereas 3 out of the total 9 were focused on demarcating plot boundaries. The seller and buyer of land

play important roles in conducting land transactions. Local leaders or individuals agreed upon by both parties in the agreement are also designated as witnesses to confirm the seller's rightful ownership. The witnesses are also involved in the arbitration process if any land transfer disputes come up. The sub-ward level government office validates the informal property transfer and holds the sales contract. In interviews, it was disclosed that every one of the 13 public sector officials (100%) participated as witnesses in informal land rights transfers. While witnessing, the government officials provided introduction letters and land sales contracts, recorded details about land ownership, and resolved disputes related to plot boundaries.

In conducting the activities of space organisation, the plot owner often acts as a project client to provide resources such as funds and materials to facilitate the activity. Local masons carry out the actual construction activity on site with the assistance of unskilled labourers. However, the masons are sometimes involved in preparing or searching for drawings. The interviews with local masons in Mamboleo "B" revealed two (2) out of 12 masons who used to prepare building drawings for their clients, among other duties. In Kilungule "A", 12 out of 30 dwelling owners obtained construction drawings from the local masons. Normally, the activities that need skills, like building construction, are left to people with such skills as the local masons, whereas other activities, like fetching water and passing bricks to the mason, were left to the unskilled labourers. Activities which do not need special skills can be distributed amongst the participants based on factors like age, gender, and health. In controlling access to spaces, the owners of the unbuilt spaces were also generally in charge of regulating access and managing their unbuilt spaces.

4.8 Rules engaged

Individual developers in these places were seen obtaining their land parcels in various ways based on their interests, needs, and preferences. Land disposal was done by transferring land ownership to other people by either selling or offering the land to others as an inheritance or a gift. Nevertheless, purchasing was noted as the primary method of acquiring land for individual developers. The interviewed dwelling owners in Mamboleo "B" made 28 out of 40 selections equivalent to 70% of all selections to refer to buying as a major approach they use to acquire land in this area. The interviewed dwelling owners also made 12 selections, or 30.0% of all selections, to refer to inheriting as a major approach to acquiring land. Similarly, in Kilungule "A" " twenty-eight selections, or 87.5% of all selections, were made to refer to buying as a major approach to acquiring land, and 1 out of 32 selections represented a gift, indicating that

a certain individual acquired his/her land parcel as a gift from his/her relative (Table 4:5). The interviewed dwelling owners made three selections (9.4% of all selections) to refer to inheriting as a major approach to acquiring land.

Table 4:5. Modes of land acquisition

Modes	Mamboleo “B”		Kilungule “A”	
	Number of selections	%age of selections	Number of selections	%age of selections
1: Inheriting	12	30.0%	3	9.4%
2: Buying	28	70.0%	28	87.5%
3: Gift	N/A	N/A	1	3.1%
Total	40	100%	32	100%

Source: Author field survey, 2021

For those buying or selling land, the mode of land transaction depends on the seller's preference and whether the land has a formal title. For those with formal titles, transactions follow formal procedures for transferring the title from the owner to the buyer. For those without formal titles, transactions are typically legalized through informal sales agreements. In the informal process, the buyer first seeks an audience with the seller to inspect the land being sold. After viewing the plot and being satisfied with it, the two parties negotiate other aspects, such as whether the land is family-owned or if there are any ownership disputes or boundary conflicts. Once the buyer is satisfied with these conditions, the bargaining process begins, with both parties aiming to secure the best deal possible. Negotiations primarily focus on discussing price and payment options. In the informal mode of selling land, the seller and buyer are free to decide the size and price of the parcel without any formal rules. These negotiations frequently take place in a casual setting because there are no set rules in place. During interviews with the dwelling owners in Mamboleo “B,” it was observed that all interviewed respondents had acquired their land parcels through informal sales contrary to Kilungule, where 26 out of 30 interviewed dwelling owners had no certificates of right of occupancy or residential licenses, having obtained their land parcels through informal transactions. The remaining five acquired their land informally, later surveying it, and never sold any portion of it to others.

The findings showed that research was conducted on land parcels to identify available land parcels in the market within the preferred areas of land seekers. Those looking for land are solely responsible for finding information on the land market. Nevertheless, there are instances when individuals looking for land employ private sector professionals such as brokers to gather information for them. During the interviews, it was disclosed that 10 out of 13 unprofessional private sector practitioners had previously looked for information on behalf of their clients (the

land seekers). Additionally, this process included other individuals providing the information to those looking for land, as the information on land markets came from various sources and was not centralized. Individuals within the community, such as land property agents, leaders, relatives of land seekers, and friends, were involved in providing information about the land market. In interviews, 23 selections were made by the homeowners who used to get land market information from people they knew in the area (Table 4:6). There were two options for people who got information from real estate agents and one for those who got it directly from the land sellers. In interviews with the real estate agents, they all mentioned that providing information on land markets is one of the main services they offer their clients in this area. During discussions with the *Mtaa* executive leader, it was observed that the sub-ward officials are responsible for verifying information provided, especially regarding land ownership, when required, as transfers of ownership are facilitated through a sales form prepared by the sub-ward office. In a conversation with the *Mtaa* chairperson, it was disclosed that details like ownership and dimensions of every land plot in Mamboleo "B" can be found at sub-ward government offices. The people seeking land were the ones who started and financed the project. On the other hand, individuals such as real estate agents, family members, and friends were helping potential land buyers by providing them with helpful information. Resources, like money, time, and data, were utilized in the searching land market information. For instance, individuals who hired real estate agents to assist them in searching for information on available land plots had to compensate their agents with a fee equal to 10% of the land's selling price. In Kilungule "A", The information on land for sale or potential buyers is normally obtained from a variety of sources as such information is not centralised and easily available. Land seekers acquire this information mainly from people they know in the area, such as their friends, relatives, local government officials, brokers, and even the owners of land being sold. During interviews, it was observed that 22 out of the 30 land owners interviewed acquired information from land sellers themselves, four from people they know in the place, and one from government officials at the sub-ward level (Table 4:6).

Table 4:6. Sources of information on land being sold in Mamboleo "B"

Factors	Number of selections	%ge of selections	Number of selections	%ge of selections
1: Direct from owner	1	3.8%	22	81.5%
2: Through sub - ward government	0	0%	1	3.7%
3: Through people I know in this area	23	88.5%	4	14.8%
4: Through property brokers	2	7.7%	0	0%
Total	26	100%	27	100%

Source: Author field survey, 2021

In both settlements, Mamboleo “B” and Kilungule “A”, Land subdivisions and disposal take place in a piecemeal fashion whereby landowners start with significant-sized land parcels and end up with very small-sized plots. The disposal was taking place on a piecemeal basis. In Mamboleo “B”, a few individuals who acquired land directly from the TAZARA administration, decided to subdivide their land parcels and sell them to newcomers who also kept on subdividing and selling their land portions to others until the areas became occupied by a large number of people. In contrast, in Kilungule “A”, the original land was owned by private individuals and some of them like Mr. Puluku inherited their lands from his grandfather (Mr. Khalfani Nkyemae – the Matumbi indigenous). The piecemeal mode of land subdivisions is demonstrated well by Mr. Mzuzuri in Mamboleo “B”. During a conversation with Mr. Mzuzuri’s daughter (Ms. Mwamvita), she availed, that her father initially owned around 4046.86 m² of land, which he sold in pieces. In the year 2021, only 758.00 m² of land was left after a large portion was sold. Ms. Mwamvita, went further exposing what transpired when her father was disposing of his land to other people as follows;

“Originally, the plot was a one-acre piece of land bought by Mr Mzuzuri in 1970. He bought this piece of land at two thousand (2000/=) Tanzanian shillings from one of the indigenous residents of Mamboleo “B” when he arrived from the Temeke Mikoroshini area where his original house was demolished during the implementation of NTD (Neglected Tropical Diseases) projects. Mr Mzuzuri managed to build his first house (house No. 1) in 1972. He later offered a small portion of his remaining piece of land (where houses nos. 2, 3, and 4) to his young brother, who was also displaced from the Mikoroshini area due to the same reasons faced by his brother. Mr Mzuzuri’s young brother decided to build a house (house no.2) and sell the remaining piece of land to owners of houses nos.3 and 4. Later on, Mr. Mzuzuri continued selling the remaining portion of his land to another person who constructed house no. 5, and the remaining land portion (where houses 6 and 7 stand) to Mr. Ismail Mjume, who constructed house no.6. Later on, Mr Mjume also decided to sell a small portion of his remaining piece of land to Mr. Kisimikwe who then was able to build house number 7”.

Figure 4:9 summarises the above story by Mwamvita in diagrammatic form in stages A to G.

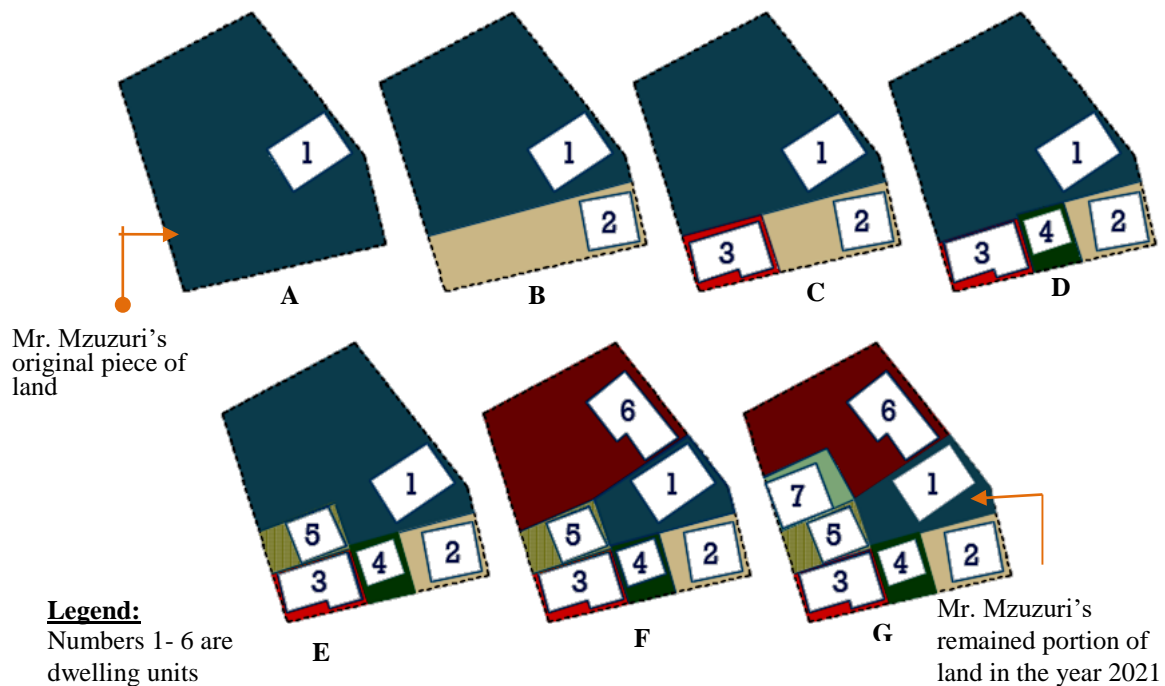


Figure 4:9. Gradual piecemeal land subdivisions

Source. Author, 2023

The land buyer seeks the land seller again so that they can transfer the land rights ownership among them. The transfer of land rights is normally done informally. Informal transfers of land rights become official through informal sales agreements, such as recognition from other residents or a sales agreement form signed by the seller, buyer, and witnesses. The form of contract or the contract of land sale²⁹ (Appendix 19), invariably in written form, often evidences the transfer of rights from one party to another. The form is obtained from the local government office at the sub-ward level or a sales letter prepared and agreed upon by both parties, plays a major role in facilitating the land ownership and transfer process. Both parties, the land seller and the buyer's side, select at least one person to witness the exercise and verify that the seller is the rightful owner of a piece of land being sold. The interviewed dwelling owners in Mamboleo "B" made 26 selections to indicate the engagement of the informal sales agreements and land rights transfers, and none of them have a formal title to land. One of the dwelling owners in Mamboleo "B", admitted that: *"There are no bureaucratic procedures at this place compared to planned settlements. Provided there are no pending issues such as ownership and plot boundaries conflicts, a single day is enough to accomplish all the processes of acquiring a piece of land, from signing letters to owning a piece"*. During an interview with one of the

²⁹ Contract of sale is translated in Swahili as 'Hati ya mauziano'

landowners³⁰ who purchased his piece of land through informal sales agreements in Kilungule “A”, she said that:

“I bought this land as a farm (shamba) from Mr. Hamza Abeid in 1997 at Three hundred fifty thousand Tanzanian shillings only (Tshs. 350,000/=). Mr. Rajabu Nasibu and Julius Magwe (Mjumbe) were selected to witness the exercise and they signed the farm sales certificate which was then signed and endorsed by Mr. Omari Pulumu who was the local leader (Mjumbe wa mtaa) during that period”

Negotiations, agreements, and openness among the parties involved in plot boundary demarcation activity were key to the success of conducting this activity in Mamboleo “B” and Kilungule “A”. The negotiations take place between the land seller and buyer though the owners of adjoining plots can decide to change the position of their plots boundaries. The on-site physical observations in Mamboleo “B”, supported by the informal interviews with the plots, revealed a case where two neighbouring landowners with adjoining plots agreed to straighten the plot boundary that was dividing their parcels of land (Figure 4:10). During interviews, one of the owners of the adjoining land parcels disclosed that: *“We agreed to straighten this plot boundary to solve a challenge of space that faced us. My neighbour lacked enough space to dig a soak pit on the southern part of his plot, while he has enough space on his northeastern part. We decided to interchange our land portions whereby he left his northeastern portion to form part of my plot, and I left him the south-western portion to place the soak pit”*.

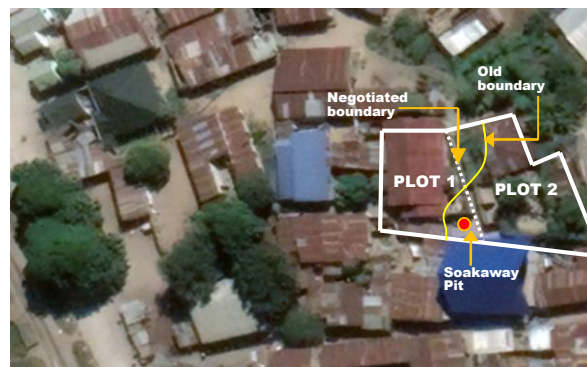


Figure 4:10. Negotiated plot boundary by adjoining neighbours in Mamboleo “B”
Source. Author fieldwork, 2021

Circulation routes in these areas have been established by means of formal and informal standards. Artificial and natural circulatory sources have been observed. Circulation routes were originally established by local natives to link their farms with other areas. Although there

³⁰ Ms. Hadija Nuru Kaniki interviewed on June, 2020

were other local inhabitants, these people had built their own ways of moving about between their farms and their homes. They also gave them access to other key areas. After their arrival, the inhabitants began to build large roads, capable of holding at least one car, to serve themselves and the inhabitants of the consolidated built-up area. According to interviews with the long-term residents of Mamboleo B, the original inhabitants of the area have established a circulation route linking their homes (Unubini) with other important places such as Temeke and TAZARA stations, and allowing them to travel between their farms and their homes. After their arrival, the inhabitants began to build large roads, capable of holding at least one car, to serve themselves and the inhabitants of the consolidated built-up area. Mrs. Nandenga stated:

“In 1975, we had agreed collectively to leave space for circulation to allow passage of vehicles such as ambulances which could come to pick sick people to hospital or carrying luggage for newcomers to reside in the area and the like. This was possible by that time as houses were scattered and land was available, but now it is difficult, as you can see”.

Figure 4:11 shows the circulation path created by Mrs. Nandenga and her fellow dwellers and has existed since 1975. In Kilungule “A”, it was also observed a case where the land owner³¹ volunteered a portion of his land parcel to be used for circulation and it later became a major inner access road linking some parts within this settlement. Natural agents like surface rain waters and animals’ footpaths resulted in the formation of spaces which later became adopted as circulation paths. The rainfall drainage channels resulting from the surface rainwaters are used as drainage channels when occupied by rainwater and become adapted as circulation paths whenever they are dry. Adoption of rainfall drainage channels was evident in Mamboleo “B” where the physical observations revealed some circulation paths of this kind. Kungule Road (Figure 4:12) is one of the circulation paths that was formed by adopting naturally occurring rainwater drainage channels. When it rains, this road becomes occupied by flowing surface rainwater and is hence used as a rainwater drainage channel. During dry seasons, the drainage channel is used as an access road connecting Mamboleo “B” settlement with other settlements such as Mamboleo “A”.

³¹ Mr. Puluku interviewed in the yeay 2020.

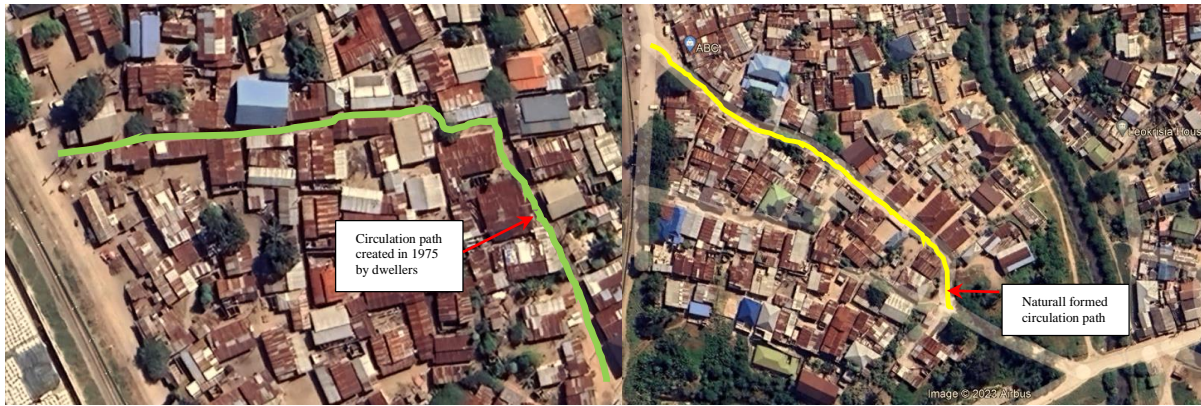


Figure 4:11. Circulation path created by Mamboleo “B” dwellers in 1975
Source. URT: 2006

Figure 4:12. Naturally formed circulation path in Mamboleo “B”.
Source. URT: 2006

The paths created by animals, were observed, in Kilungule “A”. During interviews with the dwelling owners of this place, one respondent narrated that, initially, “people who were coming to conduct agricultural activities at this place were adopting the naturally occurring circulation paths like the rainwater drainage channels and those that were being used by pastoralists who used to pass through this area seeking green pastures for their livestock and on their way to *Palio la ng’ombe* which was in *Kimara mwisho* area”.



Figure 4:13. Kimara mwisho location and paths created by pastoralists in Kilungule “A”.

Source. Google Imagery, 2024

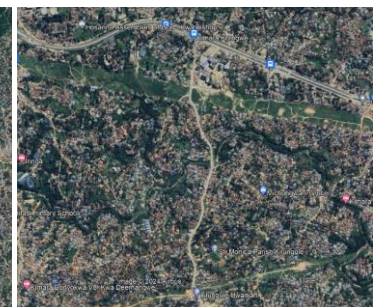


Figure 4:14. Paths created by the pastoralists in Kilungule “A”
Source. Google Imagery, 2024

People were also adopting restricted unbuilt spaces under or above service infrastructures like gas pipes and those under the high-tension electricity and water supply mains. The physical observations observed two (02) unbuilt spaces under High Tension electricity mains, one in the northern and another in the southern parts of Kilungule “A” being used as circulation and recreation spaces. Figure 4:15 shows the unbuilt space in the northern part of this area.



Figure 4:15. Football pitches under High Tension electric lines on the northern side of Kilungule “A”
Source. Author fieldwork, 2021.

The formal rules are also involved in creating the major access roads to link these areas to other parts of the city. Mchicha road is among the roads created formally by the government to link this area and Ilala municipality and to decongest the major roads like Mchicha road in Mamboleo “B” (4:16). Similarly, the formally created circulation paths were observed in Kilungule “A”. In the 2000s, the local government administration in Kilungule “A” created the *Maji-chumvi* - Kilungule road (Figure 4:17), to link this place to Morogoro Road and Dar es Salaam’s CBD. Nowadays, the formalisation program has earmarked circulation paths to be widened when funds to compensate the landowners are available. During interviews with the landowners, it was realised that 12 out of 30 had spared some portions of their land for roads and the expansion in Kilungule “A”.



Figure 4:16. Mchicha road in Mamboleo “B”
Source. Author fieldwork, 2021.



Figure 4:17. *Maji-chumvi* - Kilungule road
Source. Author fieldwork, 2021.

Construction of dwellings primarily occurs in a spontaneous, gradual, and flexible manner. Incrementally, developers begin or accomplish their dwelling construction activities whenever they wish, provided funds and needs are available. The developers make autonomous decisions regarding housing modification activities like additions, extensions, and even the erection of new structures on their plots. In this fashion, dwelling constructions are non-timely and spread over time, contrary to the wholesome fashion. The developer normally begins by erecting a

starter or core unit from easily available and affordable materials, using a simple building form, construction technology, and styles, and then moves in. With time, this owner begins consolidating the unit by carrying out some incremental adaptations, appropriations, extensions, additions, and alterations to enable it to accommodate more functions. Though the wholesome fashion existed, the incremental mode was seen as dominant, particularly in Mamboleo “B” and the indigenous zone of Kilungule “A”. In Kilungule “A”, 27 out of the 30 interviewed dwelling owners admitted that they constructed their dwellings incrementally while in Mamboleo “B”, 19 (73%) out of 26 interviewed dwelling owners had constructed their buildings in an incremental fashion. The on-site physical observations and interviews with dwellers³² in Mamboleo “B” revealed one starter house (Figure 4:18 and Figure 4:19).



Figure 4:18. Mr. Madandi's starter house in 2021
Source: Author field survey, 2021

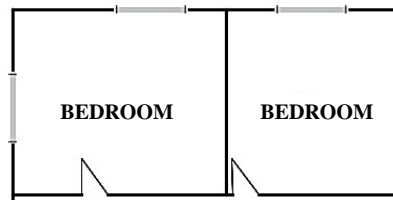


Figure 4:19. Mr. Madandi's starter house plan
Source: Author field survey, 2021



Figure 4:20. Starter unit in Kilungule “A”
Source: Author field survey, 2021

In an interview with Mr. Semvua, he outlined the process of building his homes as follows:

“I began with the construction of two rooms (1 & 2) and a pit latrine, which is now a poultry room (3) in 1996. After the first phase, my family began to increase. This prompted me to add two more rooms (3 & 4). The rise of insecurity made me construct a fencing wall (6). The increase in the number of people seeking rooms to rent seduced me to build a room (7) for rent in 2004. In the same year, as more renters asked for rental rooms, I added one more room (8). The rent paid for rooms 4 and 5 helped me to build a sitting room (9). Later, my wife needed a room for a food vending business, which made me build another room (10). Some renters paid in advance so I could build them rooms for business. So, their advance payments and rent from other rooms helped me build rooms 11, 12, and 13. Later, I realised my wife’s reputation was at stake as she quarrelled with my renters for utilising the corridor space for cooking. This situation made me construct a separate room (14) to be used as a kitchen for my wife. Further, the main gate (15) was installed on my compound. As some years passed, I decided to construct a separate toilet with an Asian-type WC and a bathroom adjacent to the old pit latrine to align with the advanced modern world. I changed the pit latrine to a poultry room to prevent renters from putting heavy luggage on the floor with unproven strength,” said Mr. Semvua.

³² Mr. Adrian Madandi and Mr. Ngomela interviewed in the year 2021

Further, Figure 4:21 presents an overview of the phases involved in the gradual building process of Mr. Semvua's residences.

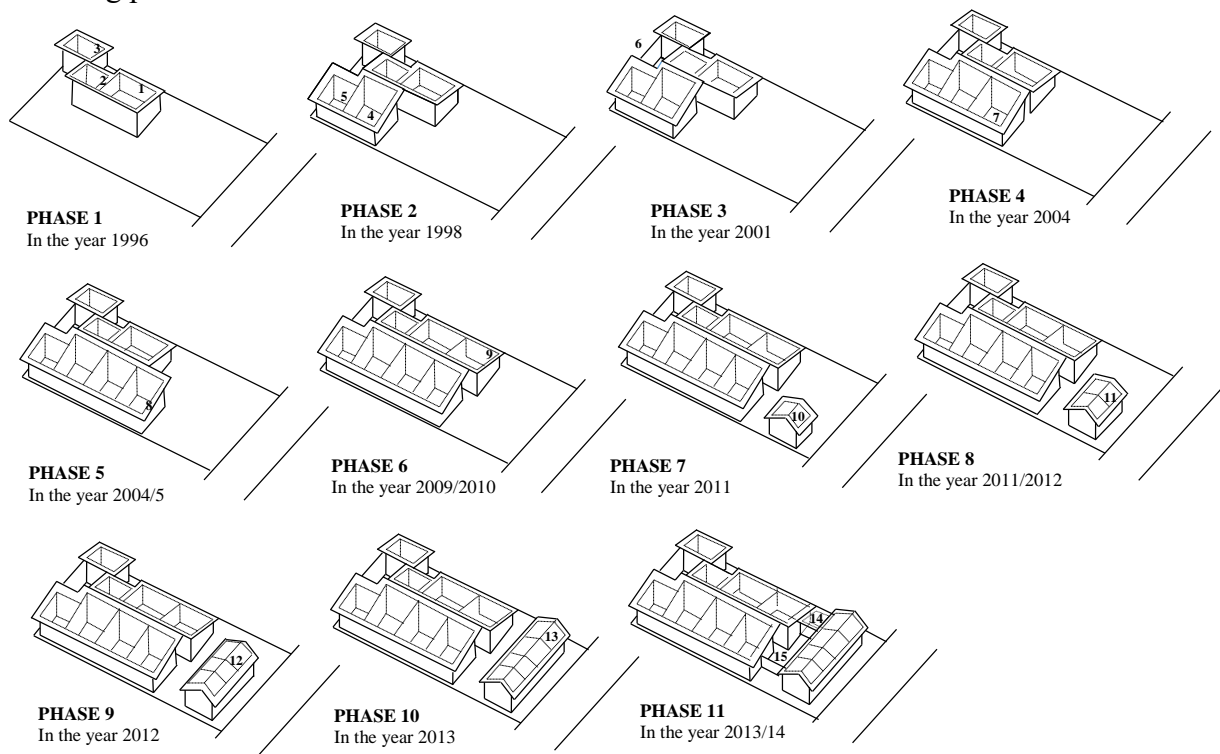


Figure 4:21. Incremental construction phases of Mr. Semvua's dwellings in Mamboleo "B".

Source. Author, 2023

The wholesome fashion was seen as common to the affluent in these areas, especially in Mamboleo "B". In Kilungule "A" the wholesome fashion was seen as common in the foreigners' zone where according to sub-ward official information, the majority of its residents are affluent. In a wholesome fashion, developers build a complete house within a certain period before occupying it. The physical surveys revealed some dwelling units that were built in a wholesome fashion in Mamboleo "B" and Kilungule "A". The building in Figure 4:22 shows a four-bedroom – house with a single self-contained main bedroom in Mamboleo "B" and a six-bedroom house with basement car parking and storage space (Figure 4:25) in Kilungule "A" (Figure 4:23). The owner of this house engaged an architect to envision his dwelling design and prepare drawings for the same. He also involved a planner in surveying his plot and an engineer working with his local mason to realize the plan. Un-built spaces in this place are used for private activities such as car parking, family gatherings or sometimes with the public, particularly during functions, livestock keeping, and small gardens.



Figure 4:22. Mr. Mjume's house in Mamboleo "B"
Source: Author Field observations, 2021



Figure 4:23. Part map of Mamboleo "B"
Source: Google map, 2023



Figure 4:24. Part map of Kilungule "A"
Source: Google map, 2023



Figure 4:25. Mr. Chiguma's wholesome house in Kilungule "A"
Source: Author Field observations, 2021

The Spontaneous mode of dwelling construction was not common in both places, particularly in Kilungule "A". However, the visual analysis revealed a case of a dwelling unit that was built spontaneously in Mamboleo "B" (Figure 4:26). During interviews with the owner³³, she said that her neighbour requested her to allow him erect a temporary kiosk for business, with the agreement that he would demolish it whenever the owner needed her land. The neighbour permitted him to do it. Nevertheless, the man disregarded the agreement and built a permanent shelter (Figure 4:27). The man hired numerous local masons and labourers who constructed the permanent building in a day while the neighbour was away, without revealing his identity.



Figure 4:26. Part map of Mamboleo "B"
Source: Author Field observations, 2021



Figure 4:27. Spontaneously built structure
Source: Author Field observations, 2021

³³ Jamila Said Gendo interviewed in the year 2020

Dwelling construction activity mainly continues in tandem with the additions of new houses on a plot to form a dwelling compound. In this scenario, there are two cases. In one case the dwelling owner added more dwelling units on his dwelling compound on his own. The developer may add buildings for rental accommodation to accommodate more family members or relatives. The physical surveys and the Google map of this area, supplemented with unstructured interviews with the dwelling owners in Mamboleo “B” and Kilungule “A”, revealed some dwelling compounds in which the dwelling owners added more dwellings for their own purposes. Figure 4:28 shows a plan and Figure 4:30 is a 3D view of Mr. Munishi’s dwelling compound in a certain area of Mamboleo “B” (Figure 4:29) which he decided to build a new modern house in the central part of his plot for his own accommodation. He then moved from his original house to the new house. Further, Mr. Munishi also built a modern pit latrine with a water closet (WC) and demolished the old one which was an open-pit latrine without a water closet. He also added other units (in yellow) for rental shop accommodation.



Figure 4:29. Part map of Mamboleo “B”
Source: Author Field observations, 2021

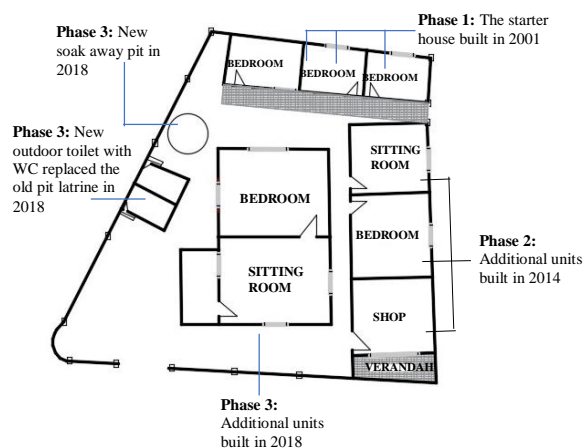


Figure 4:28. Mr. Munishi’s extensions & additions - Mamboleo “B”
Source: Author field observations, 2021



Figure 4:30. Mr. Munishi’s dwelling in Mamboleo “B”
Source: Author field observations, 2021

This study also discovered some dwelling compounds, their dwelling owners added more dwelling units for rental accommodation purposes. The physical observations in Kilungule “A” revealed some dwelling compounds accommodating dwelling units for rental accommodation including those owned by Mr. Lupimo shown (3D in Figure 4:31 and plan in Figure 4:33) and Mr. Mjeshi (3D in Figure 4:32 and plan in Figure 4:34) in Kilungule “A” (Figure 4:35).



Figure 4:31. Front view of one of Mr. Lupimo's dwellings
Source: Author field observations, 2021



Figure 4:35. Kilungule "A" map
Source: Google map, 2022



Figure 4:32. Front view of one of Mr. Mwanajeshi's dwellings
Source: Author field observations, 2021



Figure 4:33. Mr. Lupimo's dwellings in a fenced compound in Kilungule "A"
Source: Author field observations, 2021



Figure 4:34. Mr. Mwanajeshi's dwellings in a fenced compound
Source: Author field observations, 2021

The dwelling construction activity for other dwelling owners was taking place parallel with the disposal of some land portions. The on-site physical observations supported by interviews and analysis of Google Maps revealed two cases whereby the landowners developed portions of their lands while subdividing and selling the remaining portions to other people in need. One dwelling compound is owned by Mrs. Komba (Figure 4:36) while the other by Mr. Mgaluka (Figure 4:37). Mrs. Komba bought her land parcel, fenced it and built her residential house. She began selling the remaining land portion in the year 2002. Up to now, her compound accommodated many plots owned by others. Mr. Mgaluka did as Mrs. Komba, though he first owned a land parcel which he was selling to available customers on a piecemeal basis. Later he bought another land parcel which he decided to subdivide the land and resale to other people.



Figure 4:36. Mrs. Komba's sold land plots
Source: Google map, 2024

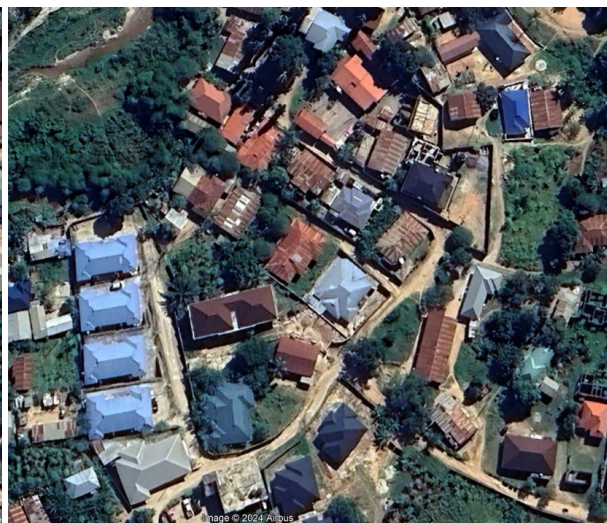


Figure 4:37. Mr. Mgaluka's sold land parcels
Source: Google map, 2024

Land was also disposed of as inheritance and hence ownership remained to family members or relatives. This case was observed in Mamboleo “B”, whereby the dwelling owned added more units but all were owned by family members. The dwelling units were added to accommodate other family members, such as uncles, aunts, nephews, grandchildren, and others (Figure 4:38). The first housing cluster emerged after Mr. Mwimba offered some portions of his land parcel to his sons as an inheritance. Figure 4:38 summarises the description given by one of his sons.

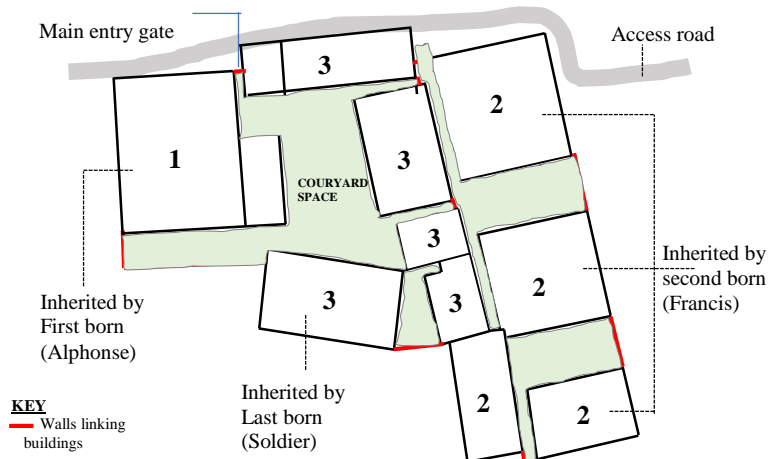


Figure 4:38. Mr. Mwimba’s land portions offered to his sons as an inheritance in Mamboleo “B”

Source: Author field observations, 2022

Control of access to space was done through negotiations under the guidance of the traditions and norms of the people of these places. The controls were done by either ultimately providing access to the public or partially or entirely limiting access to the public to utilise the private dwelling compound or circulation spaces. Free access took place by leaving the dwelling compounds unfenced as shown in certain parts of Mamboleo “B” shown in Figure 4:39 and Figure 4:41 and at Mr. Ngomela’s dwelling compound (Figure 4:40). Mr. Puluku’s dwelling compound, which used to allow public activities like political and religious congregations to take place in his dwelling compound. Mr. Chuma also allowed the public to pass through his dwelling compound only on their way to other dwelling compounds or places. However, neither Mr. Puluku nor Chuma allow vehicular movements in their dwelling compounds. Access was provided to the public to accommodate temporal activities like paths, the performance of religious or political activities, and meetings. During the interviews, one dwelling owner³⁴ Revealed that he provided free access to the public to strengthen existing social ties between his family and community members. During an interview with Mr. Ngomela’s daughter

³⁴ Baba Happy interviewed in the year 2021

(Mwanahawa), she said: “Our father warned us against preventing people from passing through our area either by putting up fences or in any other way to respect the need to live ‘socially’ and please God”





Figure 4:39. Free access one dwelling compound 2021 in Mamboleo “B”
Source: Author field observations, 2021



Figure 4:40. Free access multiple dwelling compound without ‘courtyard’
Source: Author field observations, 2021



Figure 4:41. Free access multiple dwelling compound with ‘courtyard’ in Mamboleo “B”
Source: Author field observations, 2021

Key
 Plot boundaries
 Movement of people

During an interview with one of the long-lived residents,³⁵ It was observed that there are three privately owned unbuilt spaces (Figure 4:42, Figure 4:43, and Figure 4:44) that are normally used for the performance of cultural dances and other public activities in some parts of Mamboleo “B” (Figure 4:45).



Figure 4:42. Makonde cultural activities like *Unyago* and *Sindimba*
Source: Author field observations, 2021



Figure 4:45. Part map of Mamboleo “B” area
Source: Google map, 2022



Figure 4:43. Mr. Kabumaye’s compound for Ngoni cultural dance (*Mandilo*)³⁶
Source: Author field observations, 2021



Figure 4:44. Mr. Mjume’s compound used for Zaramo cultural dance (*Unyago*)
Source: Author field observations, 2021

³⁵ Mr. Mahila interviewed in the year 2021

³⁶ This is a Ngoni tribe cultural dance

The tendency of unfenced plot owners to restrict access to the public is also uncommon in Kilungule “A”. The owners of unfenced dwelling compounds normally allow the public to access their un-built spaces. The allowed spaces included unfenced dwelling compounds and other un-built spaces such as circulation paths, spaces left between buildings, undeveloped private lands (plots) and lands under high-tension electric lines. These spaces are highly accessible and permeable to other users. These spaces accommodate a variety of activities such as walking, sitting, standing, playing, group playing, cycling, and fixing. Cycling is common among children in both Foreign’ and Indigenous’ zones. However, not all kinds of public activities are allowed to take place in such spaces. Mr. Puluku allows public activities like political and religious congregations to take place in his dwelling compound. Mr. Chuma also allows only the public to pass through his dwelling compound on their way to other dwelling compounds or other places. However, both Mr. Puluku and Chuma do not allow vehicular movements in their dwelling compounds.



Figure 4:46. 3D view of Mr. Chichulo's compound
Source: Google map, 2021



Figure 4:49. Part map of Kilungule “A”.
Source: Google map, 2021



Figure 4:47. Mr. Chichulo's dwellings in an unfenced compound and a courtyard space.
Source: Google map, 2021



Figure 4:48. Mr. Puluku's unfenced dwelling compound 3D View.
Source: Google map and author, 2021



Figure 4:50. Mr. Chuma's unfenced compound with free access to the public.
Source: Google map, 2021



Figure 4:51. Part map of Kilungule “A”.
Source: Google map, 2021



Figure 4:52. Mr. Puluku's unfenced compound map.
Source: Google map and author, 2021

The Indigenous zone has some favourable spaces where the cycling activity takes place as the area has gentle slopes and sandy soils. Sitting and selling items in Kilungule “A” particularly in the ‘foreigners’ zone normally done in rental spaces. Food vending activities were seen to take place in food vending kiosks. The private rental spaces were also seen to accommodate other activities such as private workshops and car parking among others. Figure 4:60 shows un-built private spaces being utilised for public rental parking in the ‘Foreigners’ zone. However, the intensity of utilisation of unbuilt spaces in this place is divided between the ‘foreigners’ zone’ and the ‘indigenous’ zones’. Un-built spaces in the ‘foreigners’ zone’ are fenced making them inaccessible to the public as compared to those found in the ‘indigenous’ zones’ and along major circulation paths like Kilungule road which are normally unfenced. In the ‘foreigners’ zone, it is also hard to find children playing in circulation paths, particularly in the foreigners’ zone. Children play inside fenced compounds, along major roads like the Kilungule road and in some few un-built spaces existing. Sitting and talking activities in the form of public congregations and ceremonies in Kilungule “A” take place both in some dedicated social halls and private un-built spaces.

In the Indigenous zone, socialisation takes place within circulation spaces and other unbuilt spaces. In these spaces, socialisation brings together dwellers of a particular house, neighbours and other passers-by (Figure 4:53) which shows people socialising while sitting on the extended plinth wall). This normally happens when the activity takes place in spaces which form interfaces between public and private spaces such as front verandas, and un-built spaces within fenced and unfenced non-fenced un-built spaces. The activities of sitting and selling items normally spill out from homes to the public spaces like circulation paths. In Kilungule “A” sitting and talking takes place in business places such as food vendors’ kiosks, shops, bars, and motorcycle stations.



Figure 4:53. Public-private conversations on an extended plinth wall in ‘indigenous’ zone’
Source: Field survey, 2021



Figure 4:55. Children cycling and playing in circulation corridors of the ‘Indigenous zone’
Source: Field survey, 2021



Figure 4:57. Part map of Kilungule “A”
Source: Google map, 2022



Figure 4:54. Children playing within circulation spaces of the ‘Indigenous zone’
Source: Field survey, 2021



Figure 4:56. Private plot rented for charcoal selling and food vending kiosks.
Source: Field survey, 2021



Figure 4:58. Private local beer kiosk in ‘Indigenous zone’
Source: Field survey, 2021



Figure 4:59. Shops along Kilungule road
Source: Field survey, 2021



Figure 4:60. Private rental parking yard.
Source: Field survey, 2021

Partial access was usually done by fencing the dwelling compounds while allowing the public to partially use the enclosed space to perform public activities like religious congregations and cultural activities or pass to other parts. Provision of partial access was not common in Kilungule “A” where most of the dwelling compound had either full or limited access. In Mamboleo “B”, provision of partial access was common. This was done by putting an operable gate to the ‘go-return’ access or ‘through accesses’ within the dwelling compounds or circulation spaces like those between two buildings. During physical observations in Mamboleo “B” (Figure 4:63) this study identified two fenced dwelling compounds (Figure 4:61 and Figure 4:62) with ‘through access’ in which other people are allowed to pass on their way to other places. During an interview with one the owners³⁷ of the fenced dwelling compound with

³⁷ Baba Happy (Happiness’s father) interviewed in 2021

through accesses he mentioned enhancement of social connectivity and love amongst the dwellers of this place as what makes him allow other people to pass through his dwelling compound to other places.

This study also observed two segments of circulation corridors that allow partial access (Figure 4:61 and Figure 4:62). During interviews with Mr. Nangonga's daughter together with her mother (Mrs. Nangonga), their narrative was as follows:

“We decided to install the gate to enhance security. We shared the cost of construction and operation of the gate with our neighbour (Mr. Bushiri). Mr. Bushiri bore the cost of the construction of the gate, whereas our father, Mr. Nangonga, took the burden of managing the operation of the gate. Mr. Nangonga's son is the one who operates the gate. He opens the gate at 6:00 a.m. and closes it at 10:00 p.m.”.



Figure 4:61. Dwelling compound with multiple accesses
Source: Author field observations, 2021



Figure 4:63. Dwelling compound with multiple accesses
Source: Author field observations, 2021



Figure 4:62. Entry to Happy's father compound
Source: Author field observations, 2021

In Kilungule “A” there were also observed dwelling compounds which are organised with their dwelling units forming a central space and those which were not. In the latter case, the dwelling units were only associated by just their proximity to each other as each unit in a compound assumes its orientation (Figure 4:67). During physical observations in this place this study observed 5 dwelling compounds that form courtyard spaces. These were found in other parts of Kilungule “A” apart from the ‘Indigenous’ zone’. These kinds of dwelling compounds were mainly owned by a single individual or a group of people with shared interests and ownership like family members. In dwelling compounds which form central spaces, owners normally locate dwelling units in the perimeters or at the rear edge of the plot facing the central space (Figure 4:64 and Figure 4:66) or access road (Figure 4:65) leaving the central space for future

use, though sometimes in some cases these locations happen by accident. The units may also be placed at varying proximities depending on the intention of the owner or developer though sometimes they happen by accident (unintentional). The central space that results from such kind of an organisation is mainly used for public activities such as the performance of cultural activities and the like. At Mrs. Komba's dwelling compound in Figure 4:64, the central space is used for the performance of domestic activities such as clothes drying and for the performance of cultural activities.



Figure 4:64. Dwelling compound forming a central space in Kilungule "A" area
Source: Google, 2022



Figure 4:66. Dwelling compound forming a central space in Kilungule "A" area
Source: Google, 2022



Figure 4:68. Part map of Kilungule "A"
Source: Google, 2022

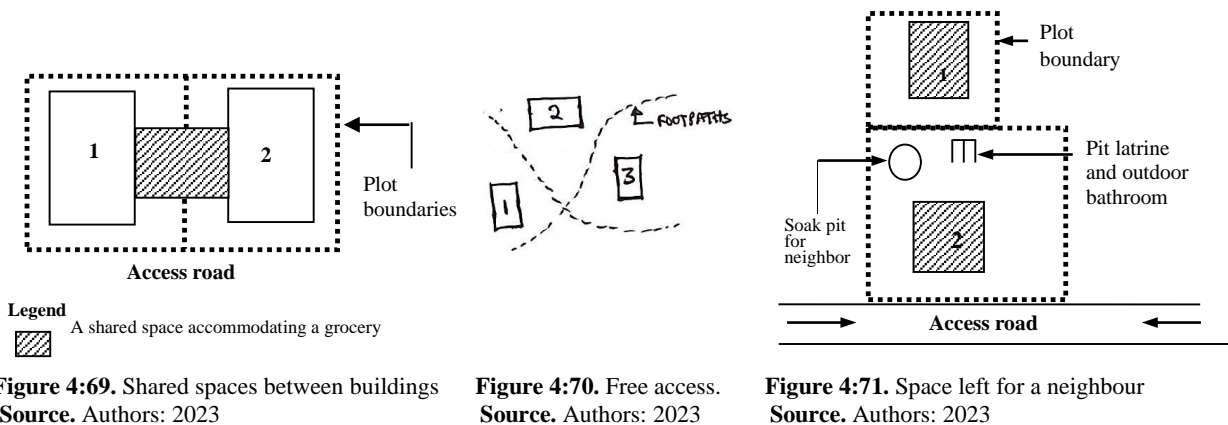


Figure 4:65. Buildings facing a central space in Kilungule "A" area
Source: Google, 2022



Figure 4:67. Dwelling compound not forming a central space in Kilungule "A" area
Source: Google, 2022

Partial access was also done in the form of sharing space utilisations. Analysis of Google Maps and physical observations revealed four forms of shared spaces in the Mamboleo "B". The first form in Figure 4:69 is the formation of shared spaces between adjoining buildings where the owners of the dwelling units numbered 1 and 2 agreed to put a grocery in the space between them. The second form in Figure 4:70 results when owners of the dwelling units numbered 1, 2 and 3 allow the public to use a portion of their land as a circulation space to another area. The third form in Figure 4:70 was formed whereby the landowner with ample space where dwelling unit number¹ stands leaves a small portion of his land for his neighbor with dwelling unit number 2 to build the soak pit.



Sharing of space utilisation like allowing the public to utilise private space for public activities such as circulation and public gatherings was also observed in this place. This sharing of space utilisation helped much to strengthen social connectivity among the dwellers of this place. In Kilungule “A” sharing of space utilisation is an uncommon practice though in some parts like ‘Indigenous’ zones’ it exists. However, the common form of sharing is that of owners of dwelling compound spaces to allow the public to utilise their spaces for public activities such as crossing, and conductance of religious, political and other congregations. These include supporting each other in material things like Sharing of space utilization such as spaces for digging of soak pits, performing social, activities like push congregates, traditional dances, religious ceremonies and the like. During an interview with some respondents in this place some of them spotted an aspect of the economics of space utilisation in the sense that, dwellers share by interchanging what they have. People in this place help each other in solving many problems related to space such as financial problems by establishing groups like VICOBA³⁸ and KICHAKIDA³⁹ to help each other during the times of difficulties like funerals and natural calamities.

Two forms of access control to spaces were observed in both places. The first was Partial control. In this form, developers put gates to control movement. During physical observations in Mamboleo “B” (Figure 4:73), this study identified two (02) accesses of controlled by gates (Figure 4:72 and Figure 4:74). Figure 4:72 shows a gate installed jointly by Mr. Bushiri and

³⁸ Village Community Banks (VICOBA) are grass root-based lending schemes from which members contribute their monetary resources and then loans are issued based on contributions of members. VICOBA operate from the grassroots level and serve peripheral residents who have small or no access to formal financial institutions (Magali, 2021).

³⁹ KICHAKIDA is an abbreviation of Swahili words “Kikundi Cha Kusaidiana Kilungule “A” Darajani” which translates as, Kilungule “A” Darajani social support group. Kilungule “A” Darajani is name of the area where the KICHAKIDA operates.

Mr. Nangonga⁴⁰ to control access and movement to public. In Kilungule “A” particularly in other areas apart from the ‘Indigenous’ zone, fences are linked up to control movement and for enhancement of land and social security. A bigger part of the private spaces in Kilungule “A” are inaccessible to the public - the situation that has resulted to the emergence of streets with few people walking along the circulation corridors bound by these fencing walls.



Figure 4:72. Controlled access at Mr. Nangonga’s place.

Source: Author field observations, 2021

Figure 4:73. Entry to Happy’s father’s compound

Source: Author field observations, 2021

KEY

- Plot boundary
- Movement of people
- Entry and exit points

Figure 4:74. Entry to Happy’s father’s compound

Source: Author field observations, 2021

The second form of access control is the full or complete limit of access. This was achieved by erecting physical barriers like wall fences and hedges at the entry point of a circulation corridor to control access to some spaces and dwelling compounds and enhance privacy and security. The barrier can be a solid wall fences to link the adjacent buildings (Figure 4:75 and 4:77). The fencing of dwelling compounds was categorised further into fenced with (plan in Figure 4:79 and its 3D view in figure 4:81) and without courtyard⁴¹ spaces (plan in Figure 4:78 and its 3D view in figure 4:80); and fenced with ‘go and return accesses’ and those with ‘through accesses’. In the dwelling compounds with courtyard spaces, the owners locate the dwelling units in the perimeters or at the rear edge of the plot facing an access road, leaving the central space for other uses such as clothes drying and performance of congregations, though sometimes these configurations happen by accident or public circulation space. Mr. Mwimba’s compound accommodates activities like selling local beer and conducting cultural activities like *Unyago*⁴², among others. Currently, this space is used for conducting religious ceremonies.

⁴⁰ Nangonga’s daughter interviewed in the year 2021

⁴¹ A courtyard or court is a circumscribed area, often surrounded by a building or complex that is open to the sky. (Caves, R. W. (2004). *Encyclopedia of the City*. Routledge 149).

⁴² In Swahili culture, most notably in Zanzibar, the word *Unyago* refers both to a set of rituals and to the music and dance styles that are traditionally associated with such rituals. The *Unyago* rituals were practiced to celebrate



Figure 4:75. location of fenced compounds in Mamboleo “B”
Source: Google map, 2022



Figure 4:78. Mr. Munisi’s fenced dwelling compound without a courtyard

Source: Author field observations, 2021



Figure 4:80. Mr. Munisi’s compound 3D view

Source: Author field observations, 2021



Figure 4:76. Part wall joining two compounds

Source: Author field observations, 2021



Figure 4:77. Part-fenced compound

Source: Author field observations, 2021



Figure 4:79. Mr. Mwimba’s fenced compound with courtyard

Source: Author field observations, 2021



Figure 4:82. location of fenced compounds in Mamboleo “B”
Source: Google map, 2022



Figure 4:81. Inside Mr. Mwimba’s Courtyard

Source: Author field observations, 2021

A complete total limit of access was common in Mamboleo “B” and Kilungule “A”, particularly in the ‘foreigners’ zone. Fencing was normally done by constructing a wall surrounding buildings within a plot (Figure 4:83). It was also done by linking up buildings located along the perimeters of a dwelling compound. Linking up buildings was done by constructing a part-wall to link two buildings or dwelling compounds’ fences. A more significant part of the private spaces in Kilungule “A” are inaccessible to the public. Public activities take place along circulation paths. Food vending activities were seen to take place in food vending kiosks. The private rental spaces were also seen to accommodate other activities, such as private carpentry workshops and car parking. In the ‘foreigners’ zone, it is hard to find children playing outside

the coming of age of girls or during weddings. In those rituals, older women would teach the young ones about sex and conjugal life. These rituals would last several days and be accompanied by dances and music.

their dwelling compounds. Public congregations and ceremonies were taking place in dedicated social halls and private, unbuilt spaces.



Figure 4:83. Buildings enclosed in a fenced compound (area in yellow) in Kilungule “A” foreigners’ zone
Source: Google, 2022

There was not even a single owner of a fenced dwelling compound who dared to allow the public to pass through his/her dwelling compound to other areas. All fenced dwelling compounds in Kilungule “A” have only one access or the ‘go – return’ accesses, which only allow a visitor to enter and exit the fenced dwelling compounds through the same entry (Figure 4:84 and Figure 4:85). In Kilungule “A” the fencing walls and hedges have resulted to the formation of streets bound with the fencing elements (Figure 4:84, 4:86, and 4:87) In the dwelling compounds with central open spaces, owners typically place the housing units around the edges or at the back of the property facing the central area or access road, leaving the central space available for potential use. However, in some instances, these placements occur unintentionally. The central space created by this type of organisation is primarily used for public activities like cultural performances and private activities such as hanging laundry.



Figure 4:84. Circulation paths bounded with hedges and masonry fencing walls in Kilungule “A” foreigners’ zone in Kilungule “A”

Source: Field observations, 2021



Figure 4:85. Fencing wall with vents in the ‘foreigners’ zone

Source: Field survey, 2021



Figure 4:86. Hedges and block wall fencing in the ‘foreigners’ zone

Source: Field survey, 2021



Figure 4:87. Block wall fencing in the ‘foreigners’ zone

Source: Field survey, 2021

The seventh activity on installing building services was already discussed in section 4.2.2 on Social services.

4.9 Summary

The chapter provides a comprehensive exploration of the processes involved in land acquisition and spatial organization in the informal settlements of Mamboleo "B" and Kilungule "A" in Dar es Salaam. It begins by examining the various activities that contribute to the production of urban space in these settlements. Land acquisition, a key process, involves a series of activities that include selecting an urban location, accessing information about land availability, negotiating land transactions, demarcating plots, transferring land rights, and constructing dwellings. Similarly, the organization of space entails activities such as defining plot boundaries, creating circulation paths, building new houses, extending existing ones, and installing essential services. These activities are undertaken in the context of informal settlements, where formal urban planning rules are largely absent, and residents rely on informal practices to navigate the urban landscape.

The people involved in carrying out these activities are diverse, ranging from the landowners themselves to local masons, brokers, and community members. Land transactions are often

negotiated directly between buyers and sellers, though in some cases family members or brokers may be called upon to facilitate the process. In both settlements, local leaders and sub-ward officials serve as witnesses to land transactions, ensuring that ownership is transferred in a manner that is recognized by the community. In the absence of formal land titles, these informal agreements are critical for establishing land rights. In addition to overseeing land transactions, these actors also play important roles in organizing space. Local masons and unskilled labourers are commonly hired by landowners to carry out construction work, reflecting the informal division of labour in these settlements. Although architects and engineers are not typically involved, their services may be sought by wealthier landowners who have the financial means to engage professionals.

The tools and rules employed in these processes are similarly informal. Simple tools such as hoes and slashers are used to clear land and create circulation paths. Boundaries between plots are often marked using makeshift materials like trees, hedges, or even discarded tires, while in more formalized cases, beacons or fences may be used to define plot limits. In terms of rules, formal land-use regulations are mostly absent, and residents rely on informal community agreements to navigate land transactions and organize space. Negotiations between buyers and sellers are typically conducted in a casual setting, with both parties discussing the price, size, and boundaries of the land in question. These informal practices are necessary due to the lack of formal land titles in many cases, particularly in Kilungule "A" where the majority of residents have acquired land through informal transactions.

The motives driving these activities differ between the two settlements. In Mamboleo "B," land acquisition was initially motivated by political factors, specifically the government's call to settle near the TAZARA railway for security reasons. Over time, however, economic factors became more prominent, with residents seeking land primarily for residential accommodation and rental housing. In contrast, Kilungule "A" was initially settled by people seeking agricultural land, though as urbanization progressed, the focus shifted toward residential development. Today, residents of both settlements are primarily motivated by the need for housing, with some landowners constructing rental properties as a source of income.

The chapter also emphasizes the communal nature of these settlements, particularly in the organization of space. Shared spaces between buildings are frequently used for public activities, despite being privately owned. This communal approach to land use reflects the adaptability of residents in responding to the challenges of urban living in informal settlements. For example,

privately owned land may be used for religious ceremonies or as circulation paths, reflecting the blurred lines between private and public space in these areas.

Overall, the chapter presents a detailed analysis of the informal processes shaping the urban landscape in Mamboleo "B" and Kilungule "A." It highlights the roles played by various actors, the tools and rules used to navigate land transactions and space organization, and the motives driving these activities. The chapter underscores the resilience and adaptability of the communities in these settlements, as they navigate the complexities of land acquisition and space organization in the absence of formal planning structures. Through a combination of informal agreements, communal cooperation, and practical problem-solving, the residents of Mamboleo "B" and Kilungule "A" have developed systems that allow them to thrive in their urban environments, despite the challenges posed by limited resources and regulatory oversight.

CHAPTER FIVE

5 CAUSES OF SPATIAL CHANGES IN INFORMAL SETTLEMENTS

5.1 Introduction

This section outlines the various factors that were seen influencing actors' decisions in the production of urban spaces in Mamboleo "B" and Kilungule "A." The interviews conducted with dwelling owners, land speculators, local masons, property brokers, and planners in both locations revealed that economic, social, political, situational, spatiotemporal, and contextual factors significantly impact land acquisition and spatial organisation activities. The financial factors were key in influencing the informal activities of space production. During interviews, the economic factors were seen controlling the activities by 28% followed closely by the situational factors by 27%. Further, the social factors scored 18%, contextual factors 15%, political factors 8%, and spatiotemporal factors 4% (Figure 5:1).

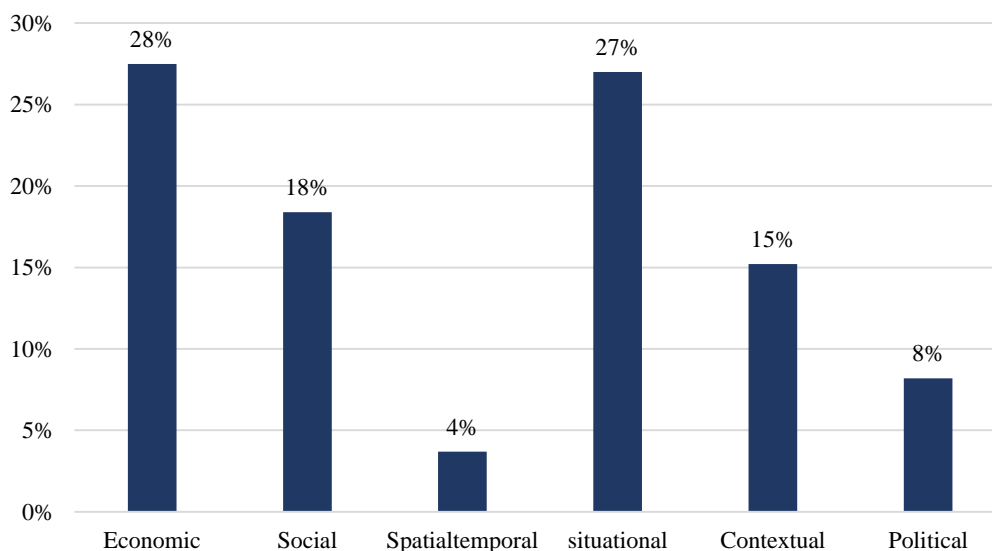


Figure 5:1. The %ge influence of the factors in the production of space in Kilungule “A” and Mamboleo “B”
Source: Author field survey, 2021

These selections illustrate the influence of these factors on various activities associated with land acquisition and space organisation. The activities include the choice of dwelling location, land subdivision, decisions to construct or improve dwellings, building quality, the extent and type of improvements, incremental construction, space-sharing practices, and residents' place attachment. The distribution of selections for each factor is illustrated in Figure 5:2.

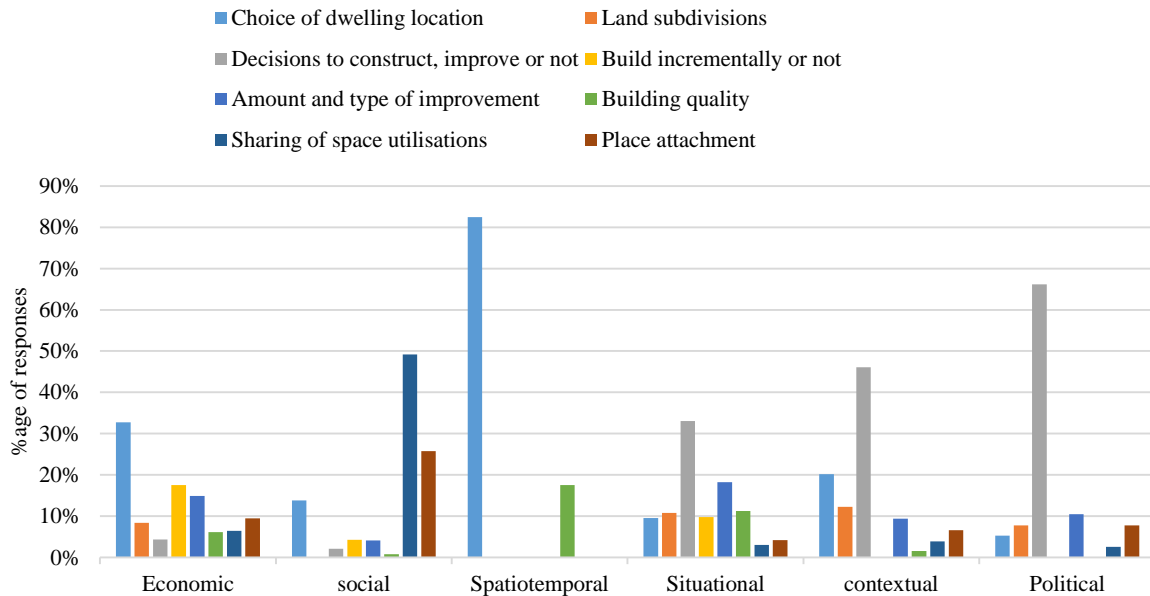


Figure 5:2. Factors causing spatial changes in Kilungule “A” and Mamboleo “B”
Source: Author field survey, 2021

5.2 Economic Factors

Economic factors played a significant role in influencing decisions related to land acquisition and space organisation in Mamboleo "B" and Kilungule "A" (Figure 5:3). From the interviews, various responses were collected in Mamboleo “B” and Kilungule “A” when the respondents were asked about ‘*Why do people decide to reside in informal settlements?*’. In Mamboleo "B", 54 or 37% of selections were made by the individual dwelling, attributing their location choices to financial reasons. 51 or 12% of selections highlighted the economic factor as a key determinant of Land subdivision exercises. 10 or 7% of selections were made by individual dwelling owners, citing financial capacity as crucial in their decision to construct, improve or not. The dwelling owners also made 25 selections, accounting for 17% of the total, opting for incremental construction due to financial constraints. 21 or 14% of dwelling owners’ selections indicated the influence of financial capacity on the type and amount of improvements dwellers make to their buildings. The influence of economic aspects on the resulting building quality was mentioned by 9 respondents, or 6% of those interviewed. 1% of the selection was made on a dwelling owner who noted shared space utilisation as a result of economic limitations. 8 or 6% of selections from the dwelling owners identified economic factors as influential in fostering place attachment. Similarly, in Kilungule "A", 46 or 28% of selections were made by the individual dwelling, attributing their choice to live in Kilungule "A" to financial reasons. 25 or 5% of selections highlighted the economic factor as a key determinant of Land subdivision exercises. 3 or 2% of selections were made by individual dwelling owners, citing financial

capacity as crucial in their decision to construct or improve, or not. The dwelling owners also made 29 selections, or 18%, opting for incremental construction due to financial constraints. 25 or 15% of dwelling owners' selections indicated the influence of financial capacity on the type and amount of improvements dwellers make to their buildings. The impact of economic aspects on the resulting building quality was represented by 10 or 6% of the selections from the interviewed respondents. 20 or 12% of selections were made on a dwelling owner who noted shared space utilisation as a result of economic limitations. 22 or 13% of selections from the dwelling owners identified economic factors as influential in fostering place attachment.

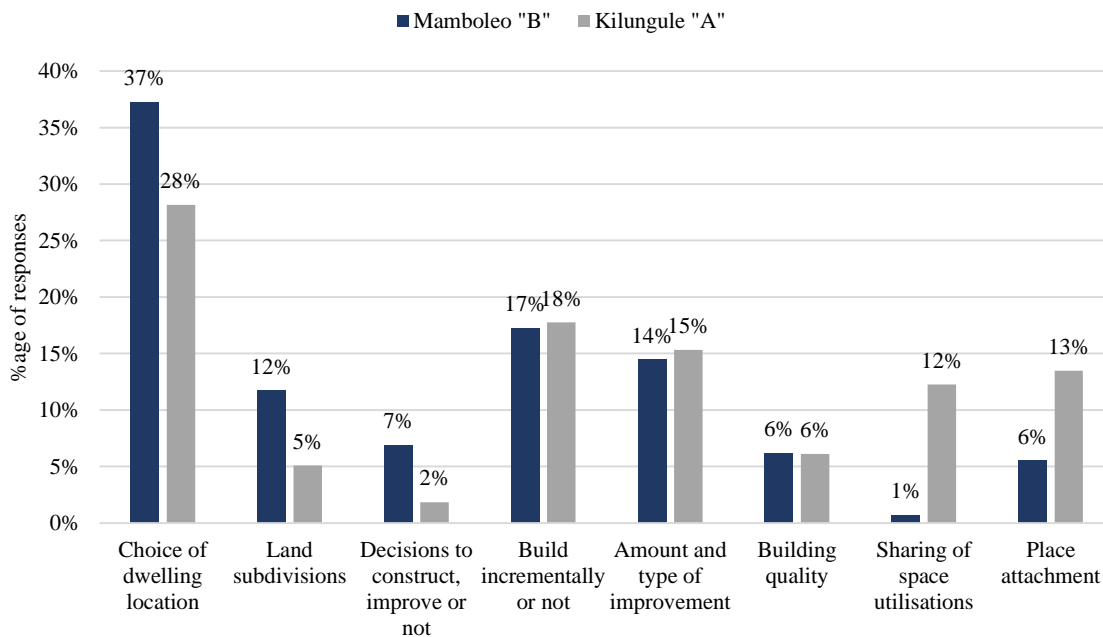


Figure 5:3. Economic Factors causing spatial changes in Kilungule "A" and Mamboleo "B"

Source: Author field survey, 2021

Of the 54 selections made by the individual dwelling attributing their location choices to financial reasons in Mamboleo "B", 24 selections, amounting to 44%, were referring to the low price of plots. 44% of those who made selections on economic aspects were referring to the low price of plots. 12 selections, amounting to 22% of respondents' selections (Figure 5:4) were made on the low cost of living in the Mamboleo "B" area compared to other places. By the low cost of living, the dwellers were referring to a collective living style that contributed to reducing expenses in this place. Further, 20% of respondents' selections represented dwellers who shared their unbuilt spaces with others to minimise the difficulties of urban life faced during that particular period. One respondent said, "*Here we share what we have. If I have water and you have ample space for conducting outdoor congregations, or you have water. I don't have space for digging a cesspool, so I would give you space for a cesspool, you would give me water*".

Another respondent⁴³ said, “*At this place, I can borrow some spices from the business people and pay later when I become financially stable.*” The interviews also revealed that 11 selections, or 20% of respondents’ choices, were based on low purchasing power, referring to land seekers’ limited financial capacity. 7 respondents, equivalent to 13.0% of respondents’ selections, were also made to address land seekers’ concerns about avoiding house rents in areas where they were renters. These were mainly residents who moved from renting houses in other parts of the city to building their own homes in the Mamboleo “B” settlement. Similarly, in Kilungule “A,” the interviewed dwelling owners made 45 selections regarding economic factors as a primary reason for their location choices (Figure 5:5). Of these, 28 or 61% of selections indicated that the cost of plots was lower compared to formal settlements. In contrast, 16 or 35% of selections pointed to the low cost of living in Kilungule “A.” Additionally, 1 or 2% of selections mentioned purchasing power as a contributing factor to their choice of location and another 1 or 2% of selections mentioned business investments as a contributing factor to their choice of location.

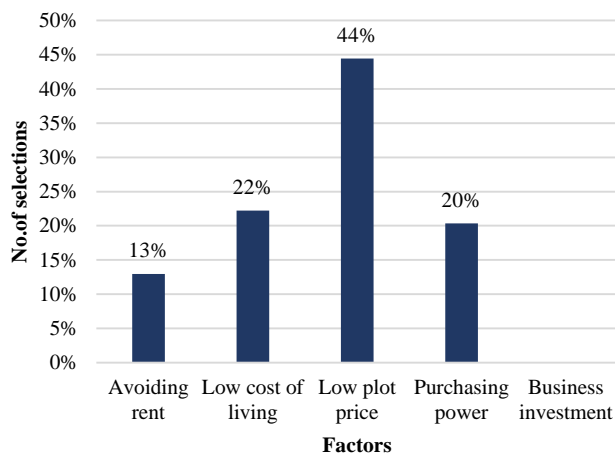


Figure 5:4. Economic factors impacting location choices in Mamboleo “B”

Source: Author field survey, 2021

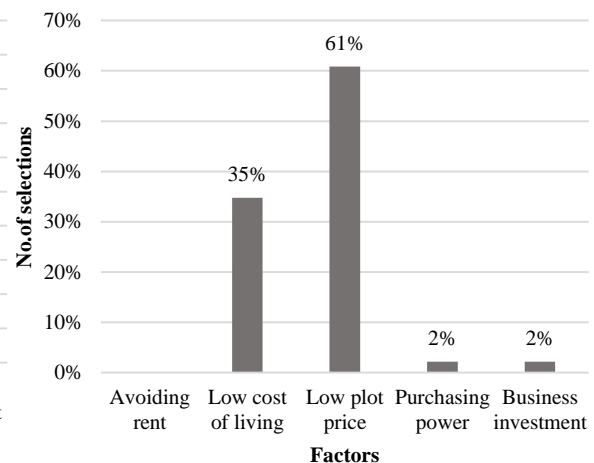


Figure 5:5. Economic factors impacting location choices in Kilungule “A”

Source: Author field survey, 2021

Of the 51 selections on the economic factor as a key determinant of land subdivisions exercise in Mamboleo “B,” 17 selections amounting to 33% stood for clients’ needs, 8 or 16% on expected profit, 3 or 6% on land price, and 6 or 12%, and 17 or 33% on purchasing power of the buyers (Figure 5:6). Similarly, in Kilungule “A,” 3 selections amounting to 12% stood for expected profits from plot sales, 9 or 36% on prevailing market forces, and 13 or 52% on customer purchasing power (Figure 5:6).

⁴³ Mr. Ngomela interviewed in the year 2022

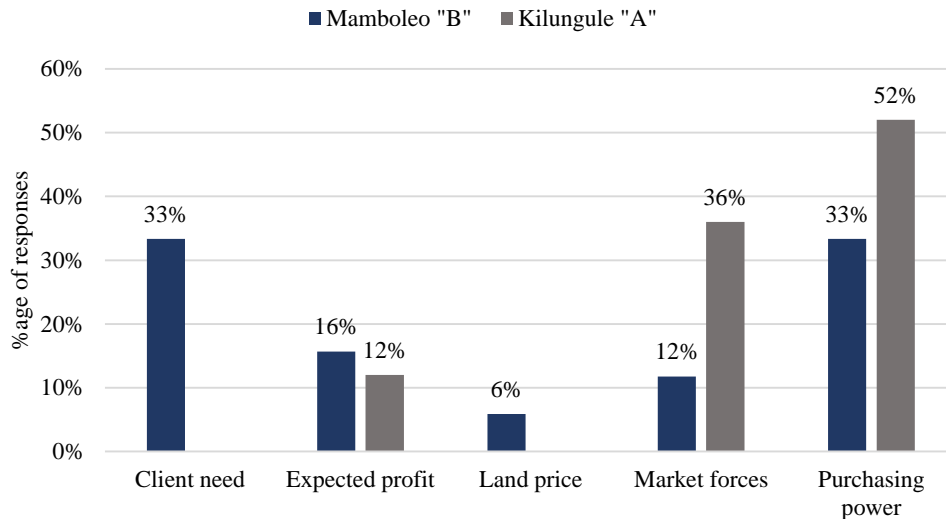


Figure 5:6. Economic factors impacting the land subdivision exercise

Source: Author field survey, 2021

Of the 8 selections from Mamboleo “B” compared to 22 from Kilungule “A” that were made by the dwelling owners to identify economic factors as influential in fostering place attachment. 6 of the 8 from Mamboleo “B” equivalent to 75% and 13 of the 22 from Kilungule “A” amounting to 59% emphasized on the importance of sound economic investments in their current locations as a motivator to remain (Figure 5:7). Conversely, two selections or 25% in Mamboleo “B” cited a lack of financial means to acquire alternative land. In comparison, 9 or 41% in Kilungule “A” pointed to the rising cost of living as a discouraging factor for continued residency in the area.

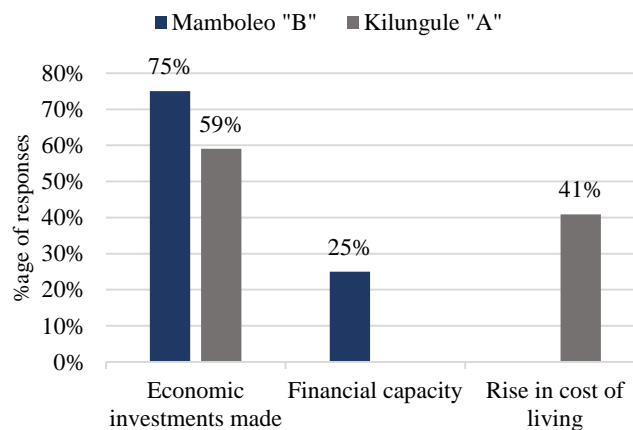


Figure 5:7. Economic factors impacting the dwellers' place attachments

Source: Author field survey, 2021

5.3 Social Factors

Social factors played a significant role in shaping land acquisition and spatial organisation in both Mamboleo “B” and Kilungule “A” settlements (Figure 5:8). Social factor was also seen influencing the land acquisition and organisation of space in Mamboleo “B” and Kilungule

“A”. In Mamboleo “B”, 16 or 13% of selections by dwelling owners on location choices, no selections were made by interviewed the dwelling owners on the influence of social factors on land subdivision exercise, 3 or 2% of selections by dwelling owners on their decisions to construct, improve or not; 1 or 1% of on choice of incremental mode for their dwelling constructions; 7 or 6% of selections were made by the interviewed dwelling owners on the influence of social factor on their decisions concerning the types and amount of improvements to make on their dwellings; 2 or 2% of selections by local masons on building quality; 61 or 49% of selections were made by the dwelling owners on the influence of social factors on their decisions to share their spaces utilisations, and 51 or 28% of selections were made by the dwelling owners to indicate the influence of social factors on their place attachment. Similarly, the influence of social factors in land acquisition and organization was seen in Kilungule “A”. 17 or 15% of selections by dwelling owners on location choices, no selections were made by interviewed the dwelling owners on the influence of social factors on land subdivision exercise, 2 or 2% of selections by dwelling owners on their decisions to construct, improve or not; 9 or 8% of selection on choice of incremental mode for their dwelling constructions; 3 or 3% of selections were made by the interviewed dwelling owners on the influence of social factor on their decisions concerning the types and amount of improvements to make on their dwellings; no selections by local masons on building quality; 57 or 50% of selections were made by the dwelling owners on the influence of social factors on their decisions to share their spaces utilisations, and 27 or 23% of selections were made by the dwelling owners to indicate the influence of social factors on their place attachment.

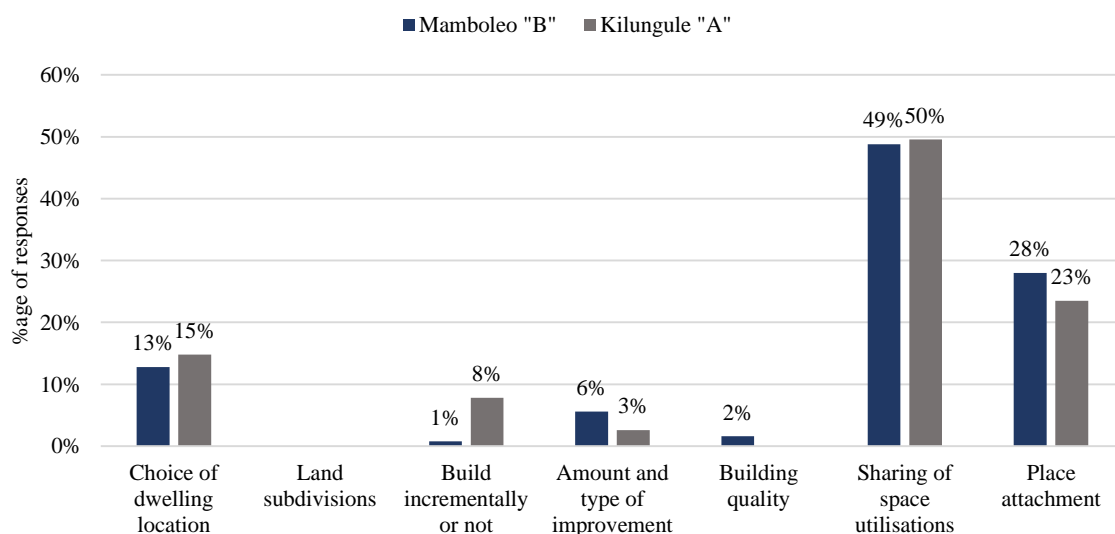


Figure 5:8. Social factors causing spatial changes in Kilungule “A” and Mamboleo “B”

Source: Author field survey, 2021

No selections were made by the interviewed dwelling owners on the influence of social factors on land subdivision exercise. In choosing urban locations in Mamboleo “B” and Kilungule “A”, the individuals looking for land brought up social factors which included avoiding landlords’ embarrassments which include strange conditions in rental contracts which may require for example the renter not to have or stay with children, not to bring guests to your place, and even not being allowed to cook certain types of food like, Collective style of living, staying close to relatives, and just being used to a place (Figure 5:9). Of the 13 who mentioned the influence of social factor on their urban location choices in Mamboleo “B”, 1 or 6% of selections was referring to avoidance of landlords’ embarrassments in rental houses while 12 or 75% of selections were referring to being used to social collectivism style of living and 3 or 19% of selections were referring to the need to stay close to their relatives. Similarly, in Kilungule “A”, of the 12 selections made on social aspect in Kilungule “A”, 4 or 33% of selections was referring to their need to avoid landlords’ embarrassments in rental houses that are prevailing in other parts of the city, 5 or 42% of selections was referring to social collectivism style of living in Kilungule “A” particularly in the ‘Indigenous zone’, and 3 or 25% of selections was mentioned just being used to this area (Figure 5:9).

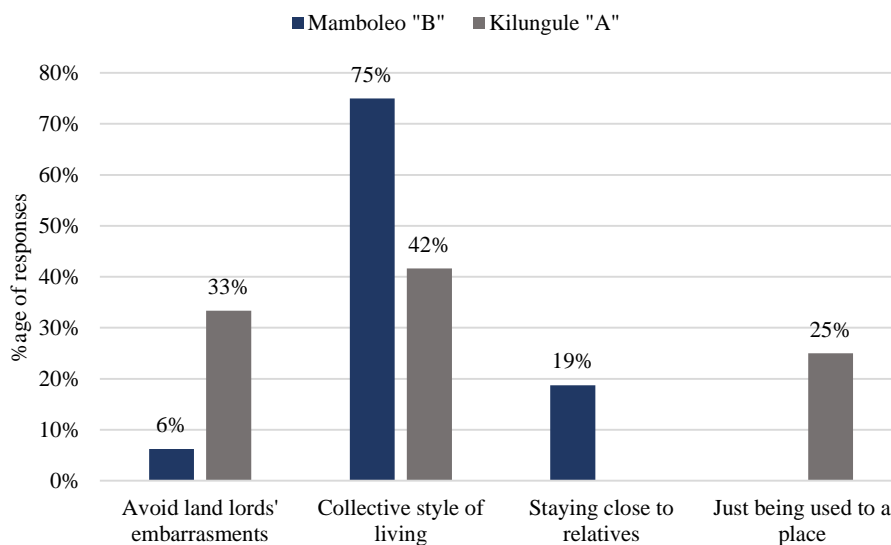


Figure 5:9. Social factors impacting location choices

Source: Author field survey, 2021

Social factor was also seen to influence dwelling owners’ decisions to construct, improve or not in Mamboleo “B” 3 or 2% of selections were made by dwelling owners on their choices to construct, improve or not. These were referring to the experience of living in the area, which gave them confidence to build new structures or improve their buildings. 1 respondent mentioned rumours from his fellow dwellers that her land parcel falls within the restricted areas as uninhabitable, as among the issues that make her hesitate to build a new house or even

improve the current one she has. Similarly, in Kilungule “A”, 2 dwelling owners cited social factors, such as fear of theft and conflicts with neighbouring residents, as key deterrents preventing them from investing in additional dwellings or upgrading their current properties.

In Mamboleo “B”, 1 or 1% of selections were made by dwelling owners on social factors, as among the factors that influenced the dwelling owners to choose whether to build incrementally or not. This one was referring to adhering to the traditions of an incremental style of building that is strong in the area. Of the 9 or 2% of all selections on social factors in Kilungule “A”, 1 was referring to family growth and 8 to respecting traditions, which is the incremental mode of building. Dwellers, particularly in the ‘Indigenous zone’ in Kilungule “A”, perceive building incrementally as a tradition, and hence anyone who finishes dwelling construction at once is considered economically affluent.

Social factor was also seen to influence dwelling owners’ decisions on the type and amount of improvements to make on their dwellings. In Mamboleo “B”, the 7 or 6% of selections were made by the dwelling owners to specifically refer to the plot boundaries conflicts that exist with their adjoining neighbours, as among the issues that discourage them from investing more in building new homes or improving their existing ones. Similarly, 3 or 3% of selections were made by the interviewed dwelling owners on the influence of social factors on their decisions on the types and amount of improvements they make on their dwellings in Kilungule “A”. Out of three choices, one focuses on the ongoing disputes over plot boundaries as a deterrent to building. At the same time, the other two highlight the increase in family size or family growth as a factor that motivates them to add more apartments to their living compounds. Concerning family growth, it was observed that whenever the family size increases, improvements become a necessity. The upgrades included the horizontal addition of rooms to cater to increased family size, the making of interior partitions, and changing door positions to cater to privacy requirements. The influence of social factors on building quality was only spotted by 2% or 2% and no selections by local masons in Mamboleo “B” and Kilungule “A”, respectively. The respondents cited positive social relationships and the tendency of some local masons to steal their clients’ building materials as among the social factors that affect the quality of buildings they construct here.

Social factor was also spotted among the factors that influenced dwellers’ decisions to share utilisation of their dwelling compound spaces (Figure 5:10). 61 or 49% of selections were made by the dwelling owners in Mamboleo “B”, compared to 57 or 50% of selections in Kilungule

“A”, which were made on the Social factors’ influences in decisions to share space utilisation among the residents of these settlements. In Mamboleo “B”, 4 or 7% of selections were made on faith reasons that, every individual should share acts of faith such as love with his/her neighbor. 11 out of 61 or 18% of selections were referring on the fear of being isolated by surrounding community; 23 or 38% of selections on acknowledgement that no one is self-sufficient and hence sharing helped them to share one another facilities and services. This meant sharing what they have, like “I have water, *you don’t have enough space for ceremonial activities conductance*”. 23 or 38% of selections were referring to the act of strengthening ties of social cooperation or social collectivism, which included the concerns to sustain love amongst dwellers of this place and to help each other by concealing each other’s poverty in the face of the community. Similarly, by the social factor in Kilungule “A”, 5 or 9% of responses stood on the fear of being isolated by the surrounding community. 25 or 44% of the 57 selections that were made on social factors referred to the acknowledgement that no one is self-sufficient, and hence sharing helped them to share one another's facilities and services. 27 or 47% of selections were made on the concerns to strengthen the social ties of cooperation that already exist in the area. To enhance the relationship of social collaboration, the respondents mentioned associated issues such as good neighbourliness, to refer to, among others, living together in harmony and mutual support, the need to sustain and strengthen love amongst the dwellers and the concern to help each other by concealing each other’s poverty in the face of the community.

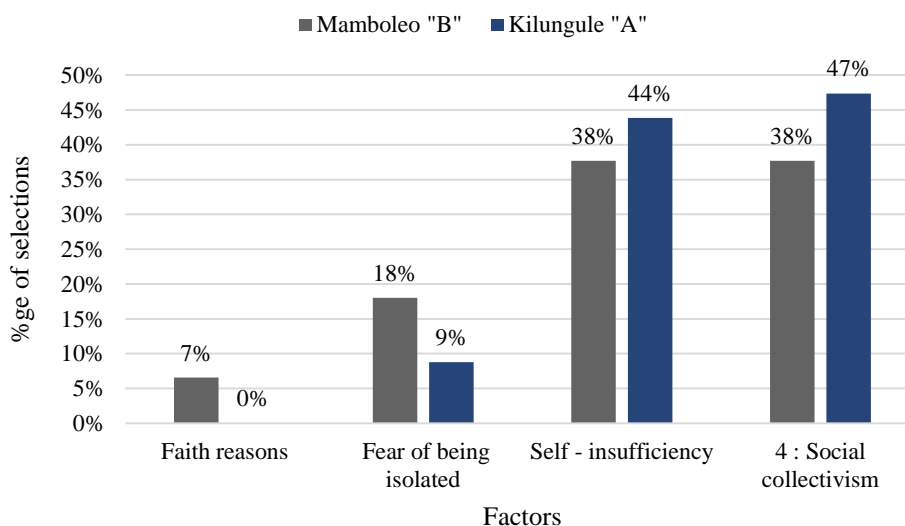


Figure 5:10. Social factors impacting decisions to share space utilisations

Source: Author field survey, 2021

Social factors played a significant role in influencing place attachment among dwellers in both Mamboleo "B" and Kilungule "A" (Figure 5:11). In Mamboleo “B”, 51 or 28% of selections

were made by the dwelling owners to indicate the influence of social factors on their place attachment compared to 27 or 23% of selections in Kilungule “A”. Out of the 51 selections made by the interviewed dwelling owners in Mamboleo “B”, 9 or 26% of selections were referring to the aspect of just being used to the place. 23% or 66% of the selections referred to the massive social investments they have made by establishing good social relationships and networks with their fellow dwellers, which are among the issues discouraging them from leaving this place. There were also 2 selections for those who feel at home, and 1 or 3% of selections for the surrounding neighbours, as these factors encourage them to continue staying in this place. Similarly, in Kilungule “A”, the interviewed dwelling owners in made 2 or 7% of selections to refer to the aspect of just being used to the place and 25 or 93% of selections on social factors referring to massive social investments they have made by establishing good social relationships and networks with their fellow dwellers as among the issues that discourage them to leave this place.

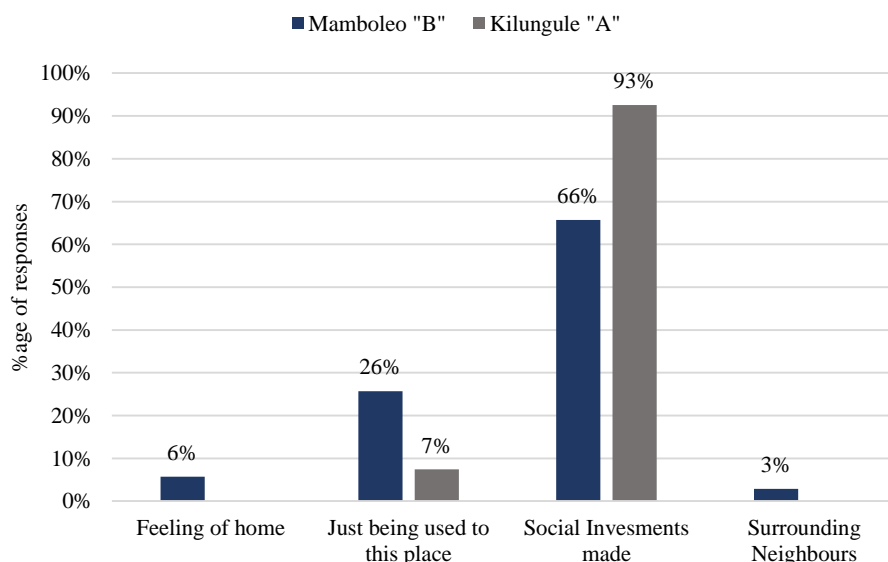


Figure 5:11. Social factors influencing the dwellers' place attachments
Source: Author field survey, 2021

5.4 Convenience Factors

Spatiotemporal factors, which relate to the interaction of time and space - such as reducing travel time between residence and work - were noted as influential in both dwelling location choices and building quality (Figure 5:12). In Mamboleo "B," eight local masons identified convenience as a key factor affecting the quality of construction, pointing out that delays by clients in providing necessary materials often hindered timely completion of building projects. Additionally, 18 or 69% of the interviewed dwelling owners in Mamboleo "B" cited convenience as a factor in their decisions to settle in the area, with 16 indicating that proximity

and ease of access to land were important, and two mentioning the straightforward land transaction processes as a draw. Approximately 96.15% of homeowners in Mamboleo "B" are engaged in informal sector activities, such as food vending and hawking, underscoring the importance of convenient, affordable land availability for their livelihood. Similarly, in Kilungule "A," convenience emerged as a significant factor influencing location choices, with 22 or 96% of the dwelling owners' selections highlighting the easy availability of affordable land as a key consideration. The time-saving aspect of the land acquisition process was crucial for respondents, as they favoured locations where transactions were quicker and less bureaucratic compared to formal settlements.

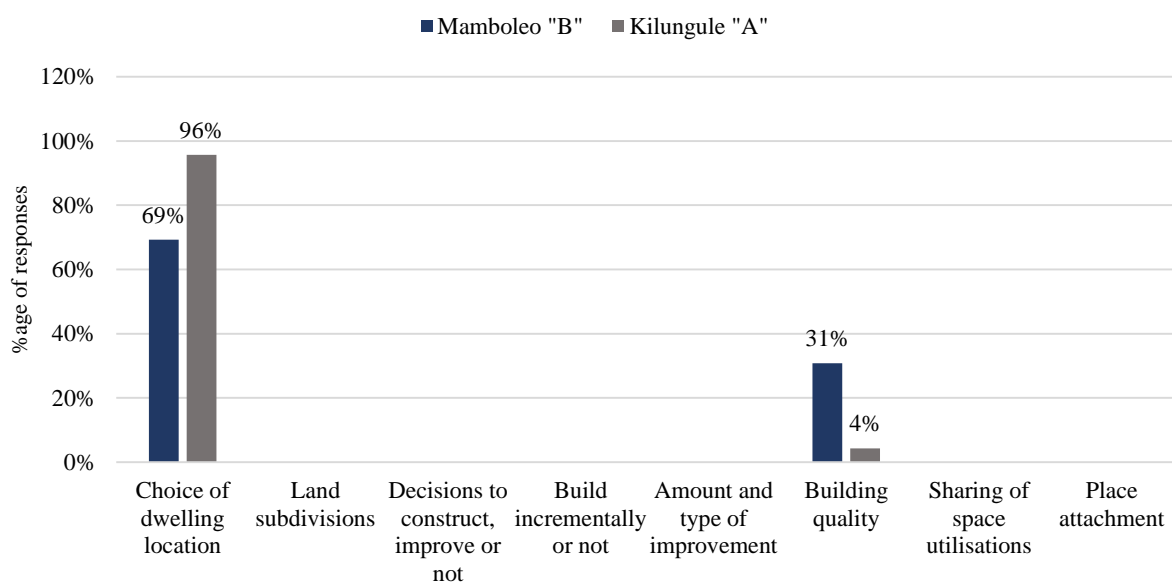


Figure 5:12. Convenience factors influencing the dwellers' place attachments
Source: Author field survey, 2021

5.5 Situational Factors

Situational factor was also seen influencing the land acquisition and organization of space in Mamboleo "B" and Kilungule "A" (Figure 5:13). The interviewed dwelling owners in Mamboleo "B" made 15 or 11% of selections on the influence of situations factors on location choices; 20 or 15% of selections on land subdivisions; 43 or 33% of selections on decisions to construct, improve or not; 8 or 6% of selections on the concern to build incrementally or not; 15 or 11% of selections on type and amount of house improvements; 22 or 17% of selections on building quality, 3 or 2% of selections on the concern to share space utilisations and 6 or 5% of selections on dwellers' place attachments. Similarly, in Kilungule "A", the interviewed dwelling owners made 12 or 8% of selections on the influence of situations factors on location choices; 10 or 6% of selections on land subdivisions; 52 or 34% of selections on decisions to construct, improve or not; 21 or 14% of selections on the concern to build incrementally or not;

39 or 25% of selections on type and amount of house improvements; 9 or 6% of selections on building quality, 6 or 4% of selections on the concern to share space utilisations and 6 or 4% of selections on dwellers' placement. Situational factor was also seen influencing the land acquisition and organisation of space in Mamboleo "B" and Kilungule "A". The interviewed dwelling owners in Mamboleo "B" made 15 or 11% of selections on the influence of situations factors on location choices; 20 or 15% of selections on land subdivisions; 43 or 33% of selections on decisions to construct, improve or not; 8 or 6% of selections on the concern to build incrementally or not; 15 or 11% of selections on type and amount of house improvements; 22 or 17% of selections on building quality, 3 or 2% of selections on the concern to share space utilisations and 6 or 5% of selections on dwellers' place attachments. Similarly, in Kilungule "A", the interviewed dwelling owners made 12 or 8% of selections on the influence of situations factors on location choices; 10 or 6% of selections on land subdivisions; 52 or 34% of selections on decisions to construct, improve or not; 21 or 14% of selections on the concern to build incrementally or not; 39 or 25% of selections on type and amount of house improvements; 9 or 6% of selections on building quality, 6 or 4% of selections on the concern to share space utilisations and 6 or 4% of selections on dwellers' place attachments.

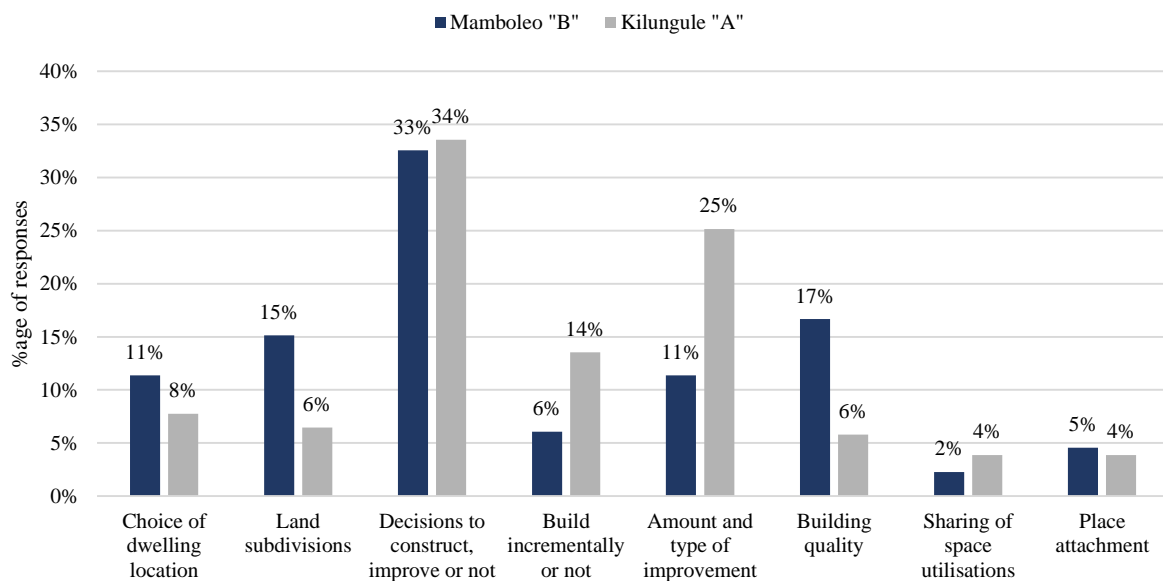


Figure 5:13. Situational factors influencing the dwellers' place attachments

Source: Author field survey, 2021

In choosing urban locations, individuals highlighted several situational considerations, referring to concerns about inheritance, sense of street security, tiredness of staying in rental houses, seeking land for agriculture, and a desire to live independently (Figure 5:14). In Mamboleo "B," situational factor scored 15 or 11% of selections on the influence of situations factors on location choices. The aspect of inheritance scored 10 or 67% of selections meaning that they

were born at the local place to become permanent residents of Mamboleo “B.” The respondents also made 2 or 13% of selections on the level of sense of street security which was facilitated by the presence of people along circulation corridors during late hours. Dwelling compounds along these live corridors have free physical and visual access to the public, as most are not fenced. During interviews, one respondent⁴⁴ said that the presence of people along movement corridors attracted her to choose the place as she is among the dwellers who go to work very early in the morning. The respondents also made 1 or 7% of selections on tiredness to stay in rental houses, 1 or 7% of selections on need for land to practice urban agriculture, and 1 or 7% of selections on the influence of situations factors specifically the aspect of desire to live independently. Similarly, in Kilungule “A”, the interviewed dwelling owners made 1 or 8% of selections on the influence of situational factors in choosing locations specifically the need for land to practice agriculture; 10 or 83% on the need based factors; and 1 selection on the influence of land brokers who seduce land seekers to buy land and reside in this area.

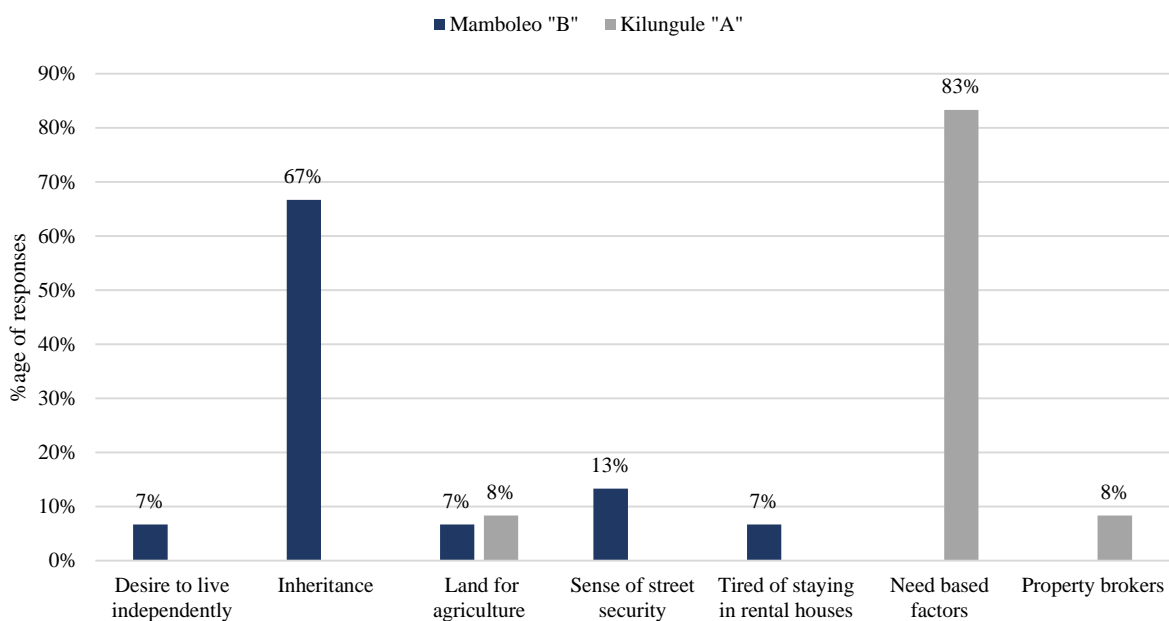


Figure 5:14. Situational factors influencing the dwellers' location choices

Source: Author field survey, 2021

Situational factors were mentioned among the factors that influence the land subdivision exercise in both places Mamboleo "B" and Kilungule "A" (Figure 5:15). Out of the 41 selections made by dwelling owners on situational factors in Mamboleo “B”, 7 or 17% of selections were referring to conflicts related to plot boundaries, 14 or 34% of selections out of 41 were made on the dwelling owners' forced or intentional disposal of some portions of their land to others. This included selling some of their land's portions or leaving it for public use such as the road

⁴⁴ Aveline Dai interviewed in the year 2021

expansions and construction of public service infrastructure. 17 or 41 % of selections on the issue of acts of fraud like the violation of land ownership agreements as it was demonstrated by Jamila’s neighbor in figure 4.27 in Mamboleo, and 3 or 7% of selections stood on the influence of situational factors specifically the individual dwelling owners’ concerns to add more land and its influence on the land subdivision exercise. Similarly, in Kilungule “A”, Out of the 51 selections made by dwelling owners on situational factors in Mamboleo “B”, 18 or 35% of selections were referring to conflicts related to plot boundaries, 14 or 27% of selections out of 51 were made on the dwelling owners’ forced or intentional disposal of some portions of their land to others. This included selling some of their land’s portions or leaving it for public use such as the road expansions and construction of public service infrastructure. 9 or 18 % of selections on the issue of acts of fraud such as the showing of wrong plot boundaries and land ownerships done by the land brokers, and 3 or 6% of selections stood on the influence of situational factors specifically the individual dwelling owners’ concerns to add more land and its influence on the land subdivision exercise. 7 or 14% of selections were made by the dwelling owners to refer to the road widening projects during the implementation of settlement formalisation program in Kilungule “A”.

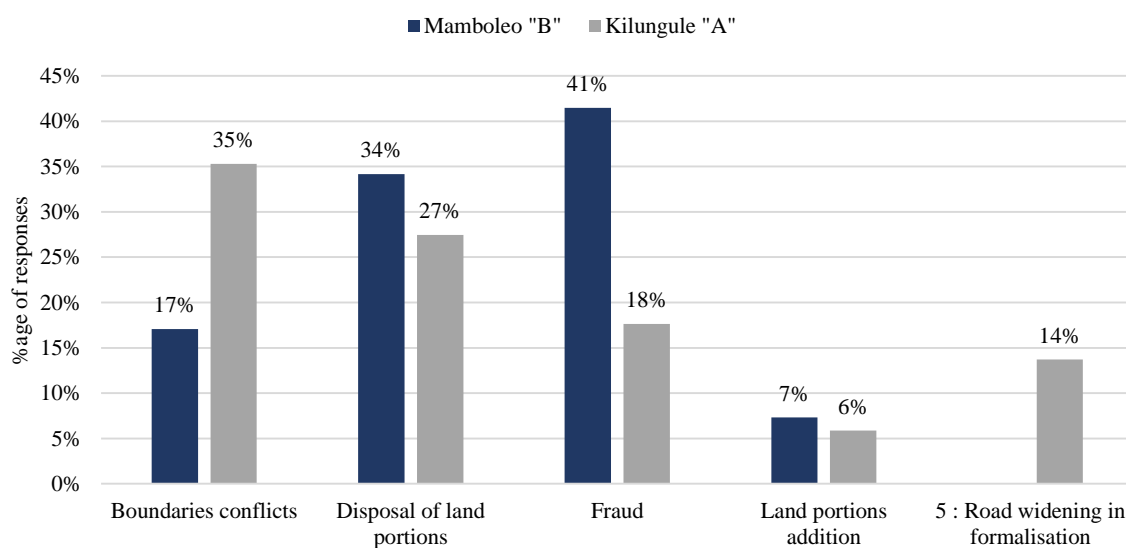


Figure 5:15. Situational factors influencing the land subdivision exercises

Source: Author field survey, 2021

Situational factors were mentioned among the factors that influence their decisions to construct, improve or not in both places, Mamboleo "B" and Kilungule "A" (Figure 5:18). The interviewed dwelling owners in Mamboleo “B” made 43 or 33% of selections on the influence of situations factors specifically the Current and prospective developments on their decisions to construct, improve or not. Of the 43 selections on decisions to construct, improve or not, 21 or 49% of

selections were made on the influence of situational factors on developers' decisions to construct, improve or not. The 21 selections on situational factors referred to expectations or hesitating to improve their dwellings in fear of the prospective and current interventions, as these programs could lead to the demolition of some houses. The current infrastructure improvement projects taking place included the widening and tarmacking of the Tandika road and raise its status as a new public transport route linking other settlements in the city such as Kiwalani, Gongolamboto, to Pugu and the cleaning and widening of Mpogo River found in this place. Both projects are part of the Citywide infrastructure improvement program, namely the Dar es Salaam Metropolitan Development Projects (DMDP). Current programs revived the concern amongst dwellers to improve their dwelling units and spaces. The cleaning and widening of the river Mpogo has also attracted new comers and changed the minds of those who wanted to leave this place before due to air pollution, rusting, and diseases caused by this river. The dwelling owners also made 17 or 40% of selections on the influence of Security risks, specifically the land conflict with TAZARA administration. The 17 selections also stood on prospective development, specifically the infrastructure developments to come, and the end of their conflict with the TAZARA administration on ownership of land along the TAZARA railway line. The dwelling owners also made 5 or 12% of selections on the Increase of newcomers.

Similarly, in Kilungule "A", the dwelling owners made 52 or 34% of selections on the influence of situational factors on their decisions to construct, improve or not. Of the 52 selections, 28 or 54% of the selections were specifically referring to the Current and prospective developments. The dwelling owners were referring to their aspirations on the coming developments (Figure 5:18). These included future availability of basic service infrastructure and the promising future of infrastructural developments in the area; availability of reliable electricity, water and other social services close to their settlement. The respondents were also referring to the improvement of the Kilungule road, which, among others, has resulted in the strengthening of infrastructural connections to Dar es Salaam's CBD and the attraction of new comers to this place, especially those working in the CBD. These factors raised concern amongst developers to transform their dwellings to make them capable of accommodating new activities that fluctuate with the market or add new structures in their dwelling compounds to accommodate arising needs.



Figure 5:16. New business investments along Kilungule road.

Source: Author field survey, 2021



Figure 5:17. New business investments along Kilungule road.

Source: Author field survey, 2021

The dwelling owners also made 14 or 17% of selections due to the increase in the number of newcomers flocking to this place. These factors raised concerns among developers about transforming their dwellings to make them capable of accommodating new activities that fluctuate with the market. The prospective incoming visitors were encouraged to improve their homes or add new ones within their dwelling compounds for the accommodation of renters or businesses such as shops and new building uses such as private schools and guest houses. 8 or 15% of selections were made on inspiration the dwelling owners get from others to construct, improve or not. 1 or 2% of selections stood for being pleased by the rise of land value. These were those with enough land to subdivide and sell to prospective customers. However, there was also 1 or 2% of selections stood on a sense of insecurity that once was at its peak in the 2000s, whereby the levels of crime associated with actions like robbery and burglary were higher in Dar es Salaam.

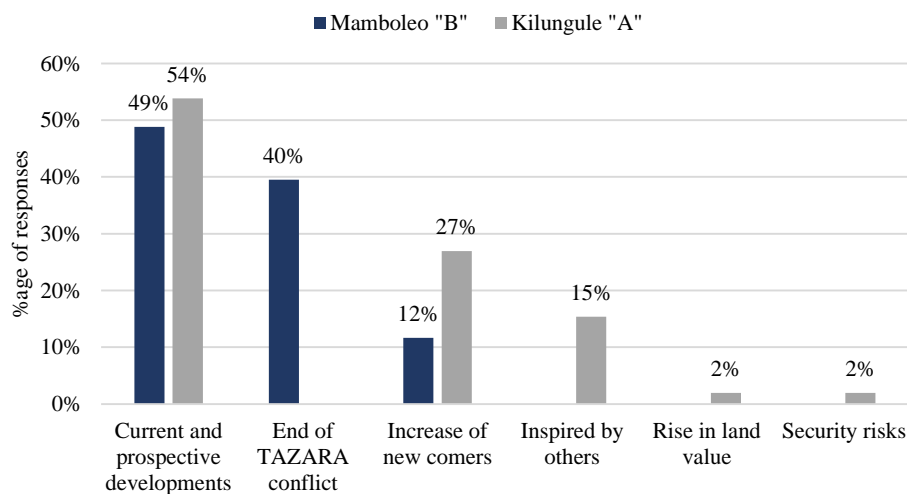


Figure 5:18. Situational factors influencing the decisions to construct, improve or not

Source: Author field survey, 2021

Situational factors received notable attention, with 8 selections from Mamboleo "B" and 21 from Kilungule "A," as influential elements in owners' decisions to Build incrementally or not" (Figure 5:19). In Mamboleo "B," respondents identified 2 or 25% of selections relating to family growth as a significant influence on their incremental building decisions. In contrast, 6 or 75% of selections were made regarding newly emerging needs. In Kilungule "A," interviewees also indicated 2 or 10% of selections concerning family growth, 13 or 62% of selections to refer to increased needs and 6 or 29% of selections related to developers' aspirations.

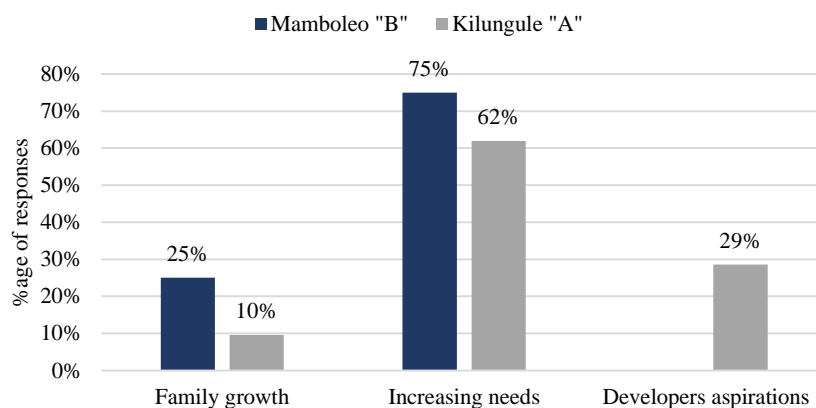


Figure 5:19. Situational factors influencing the decisions to build incrementally or not
Source: Author field survey, 2021

The dwellers' aspirations to go with emerging styles and technologies were revealed during the on-site physical observations. During physical observations in this area, buildings of varying architectural styles constructed from modern building materials were observed. Modern building materials and components, such as Gypsum ceilings, buildings roofed with high-quality roofing tiles, were observed at this place (Figure 5:20 and Figure 5:21).



Figure 5:20. Wall surface treatments, flower beds, etc. **Source:** Author, 2021



Figure 5:21. Buildings with Air Conditioners (AC) are coming.
Source: Author, 2021

Situational factors were also recognised as critical in shaping developers' choices regarding the type and extent of improvements made to their dwellings (Figure 5:22). Needs arise with time,

like family growth, developers' aspirations like catching up with globalisation pressures and advancements in design, materials and construction technologies. In Mamboleo B," respondents made 15 or 11% of selections on the influence of situational factors on the type and extent of improvements made to their dwellings. Out of the 15 selections on situational factors, 1 or 7% of selections expressed concerns about anonymity, specifically the desire to avoid being seen by the Mamboleo "B"'s sub-ward official engaging in construction activities without building permits. 3 or 20% of selections were referring to pressures from brokers who were also seducing some dwelling owners who rent their houses to improve them and rent them at higher prices, as 10% of the rental fees from tenants go to brokers as payment for their job. Additionally, another 3 or 20% of selections were related to newly arising needs, such as additional storage space. In comparison, 8 or 53% of selections were made by the dwelling owners to refer to globalization to refer to their concerns about using new building and house improvements fashions, such as using new building materials like gypsums, floor, walls and roofing tiles. During interviews, the study encountered an individual who increased the headroom and changed her house style from Maputo/Kontina to a contemporary style. In Kilungule "A," the interviewed dwelling owners made 8 or 21% of selections regarding the influence of brokers on their decisions about home improvements, 16 or 41% of selections concerning new arising needs, three related to family growth, 12 or 31% of selections regarding owners' aspirations, and. 3 or 8% on family growth. Notably, there were no selections about anonymity concerns in this context.

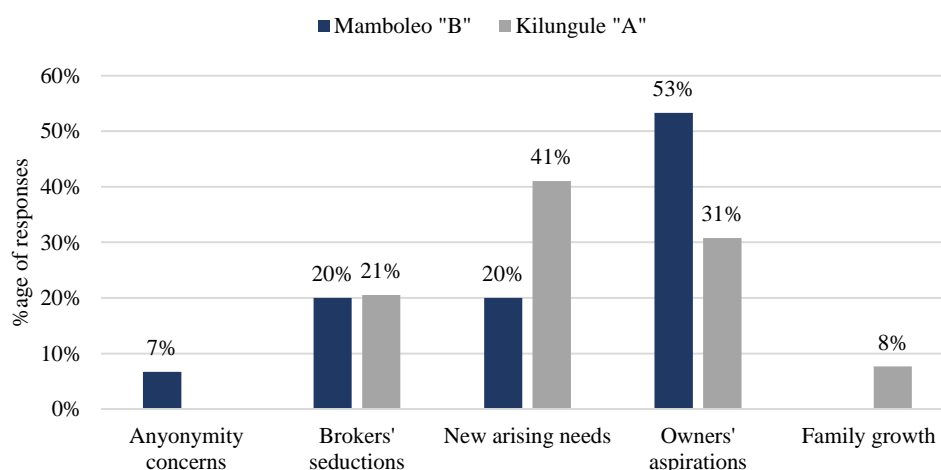


Figure 5:22. Situational factors influencing the type and extent of improvements
Source: Author field survey, 2021

Situational factor was also mentioned among the factors that influence the quality of buildings constructed in these places, Mamboleo "B" and Kilungule "A" (Figure 5:23). This aspect was mentioned by the local masons and the land speculators only. In Mamboleo "B", the local

masons made 1 or 5% of selections referring to just a bad fortune they face, 2 on influence of property brokers who seduce the dwelling owners to uplift the status of their buildings to attract many renters, 8 or 36% of selections on globalization, 3 or 14% of selections on the aspect of Mason's work competence, 6 or 27% of selections to mean that the quality of buildings is a planned output as the aspects that influence quality of buildings they construct. There was also 1 or 5% of selections who mentioned regular demolitions, 1 or 5% of selections to refer to theft of building materials as among the factors that may result in poor quality of buildings they make. In Kilungule "A", 4 or 44% of selections from local masons spotted the aspect of plot boundaries conflicts as among the issues that influence quality of buildings in these places. 2 or 22% of selections, 1 selection from the land speculators and another 1 from the local masons in Kilungule "A" stood for the influence of Client's requirements on quality of buildings they erect and 3 or 33% of selections were representing the influence of limited and slow supply of building materials by their clients as among the aspects that contribute to lowering the quality of buildings they make.

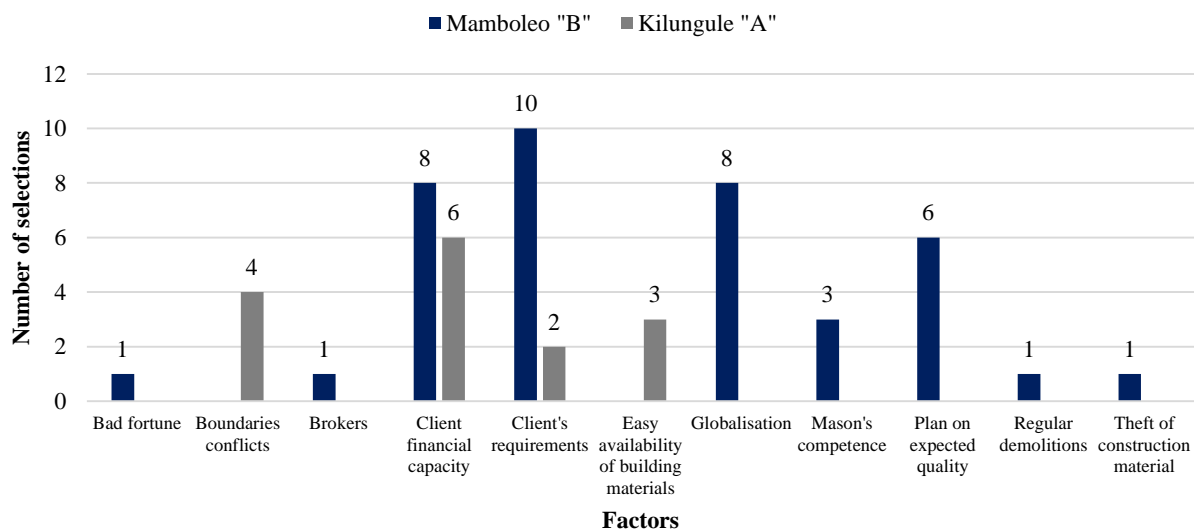


Figure 5:23. Situational factors influencing quality of buildings
Source: Author field survey, 2021

Situational factors emerged as significant influences on the decisions of residents regarding the sharing of space utilization. In Mamboleo "B," 3 or 2% of selections were made to refer to strengthening of social ties and the recognition of resource insufficiencies among residents. Conversely, in Kilungule "A," 6 or 4% selections the dwelling owners noted that emerging spatial needs played a role in their decision-making processes. Further, the situational factors were also seen impacting dwellers' place attachments (Figure 5:24). Among the 30 interviewed dwelling owners in Mamboleo "B," four of the selections indicated that their decisions to

remain in or leave their settlement depended on the arising situations. Specifically, expressed that if conditions became intolerable, they might consider relocation; however, they currently had no plans to move. Two dwelling owners further elaborated that the uncertainty of future housing options discouraged them from leaving. They articulated concerns about not knowing what to expect in a new location, particularly regarding the types of people they might encounter and the prevailing social dynamics. Similarly, in Kilungule "A," five of selections from dwelling owners indicated that the availability of infrastructure and social services encouraged their continued residency. These services included essential facilities such as hospitals and health services, with one respondent specifically mentioning proximity to the Central Business District (CBD). Additionally, one selection noted that changes in perceived security levels could influence residents' decisions to leave the area.

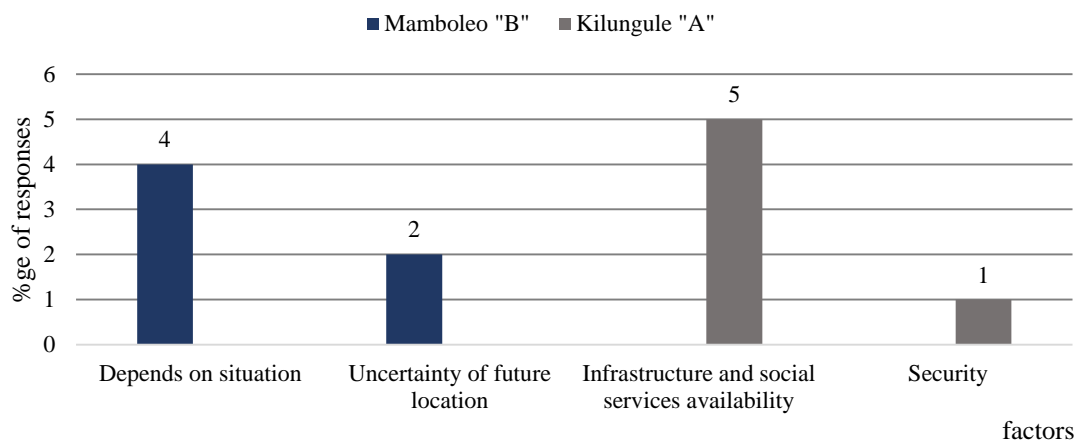


Figure 5:24. Situational factors influencing dwellers' place attachments

Source: Author field survey, 2021

5.6 Contextual Factors

Contextual factors significantly influenced land acquisition and space organisation decisions in both Mamboleo "B" and Kilungule "A" (Figure 5:25). In Mamboleo "B", 14 or 33% of selections were made on the influence of the contextual factors in land seekers' urban location choices. 7 or 17% of selections were made by brokers, land speculators, and planners on influence of contextual factors on land subdivision exercise. 19 or 45% of selections by dwelling owners, brokers and land speculators on the Contextual factors as a primary influence on their decisions to construct, improve or not. Dwelling owners made 2 or 5% of selections on the influence of contextual factors of the type and amount of house improvements. Similarly, in Kilungule "A", 9 or 7% of selections were made by dwelling owners on urban location choices. The land speculators also made 10 or 8% of choices on the aspect of land subdivision exercise. 60 or 47% of on decisions to construct, improve or not. 18 or 14% of selections were

made by dwelling owners on the influence of contextual factors of type and amount of house improvements. Further, the land speculators and local masons made 4 or 3% of selections on influence of contextual factors on building quality. 10 or 8% of selections on sharing of space utilisations and 17 or 13% on place attachments.

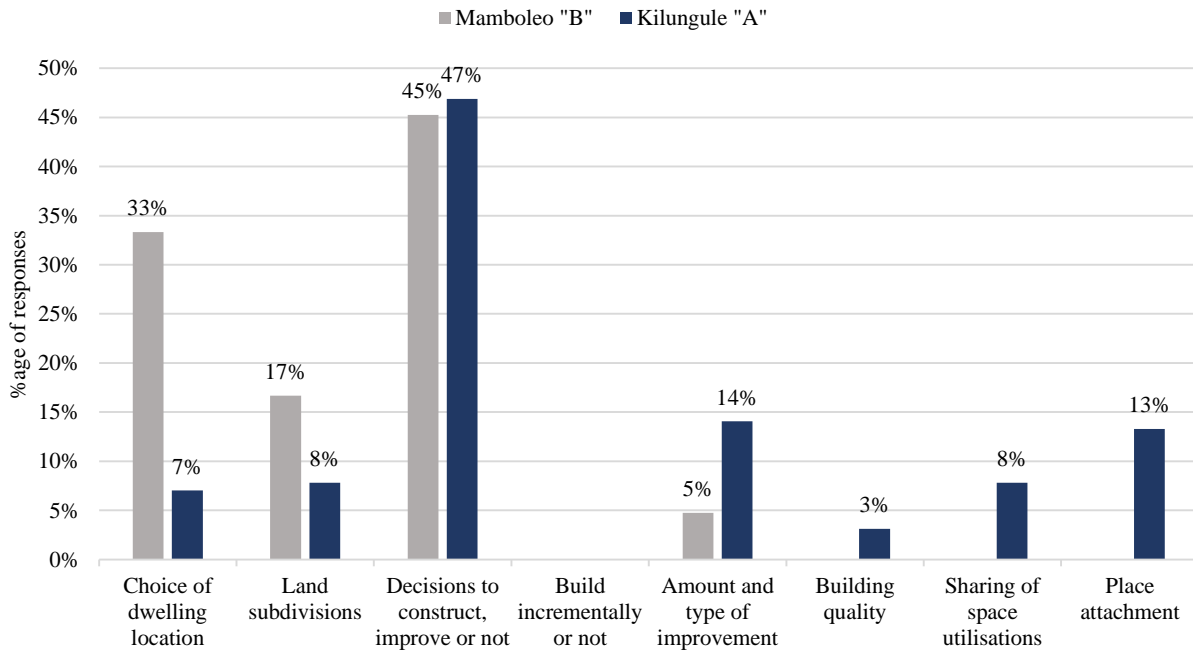


Figure 5:25. Contextual factors affecting the production of space

Source: Author field survey, 2021

In Mamboleo “B”, 12 or 86% of the responses on contextual factors in Mamboleo “B”, were referring to proximity to among to their residents’ work places, social services, community amenities such as healthcare facilities, public transportation options, and buses to reduce expenses related to commuting and living and schools for their children as among the major factors that dictate their choice of dwelling locations (Figure 5:25). In an interview with a participant, he expressed the following statement. *“My children used to cross a river when going to school every day. We were so worried during the rainy seasons when this river got flooded. To avoid future accidents, I decided to stay here where my children do not need to cross a river when going to school”*. 1 or 7% of selections were made on the aspect of natural surveillance, i.e. availability of people along the streets of this place, and the other 1 or 7% of selections were made on the concern to just change the living environment. In Kilungule “A”, 9 or 100% of selections on contextual factors mentioned proximity to areas of importance.

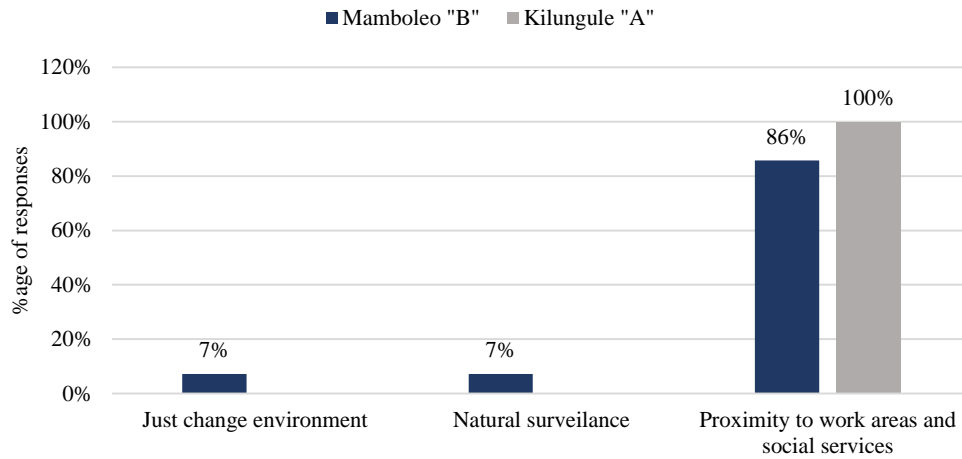


Figure 5:26. Contextual factors impacting the dwellers' location choices
Source: Author field survey, 2021

Contextual factors were identified by brokers as significant influences on the land subdivision process, as well as on the shapes and sizes of the resulting plots (Figure 5:27). In Mamboleo "B," land brokers and speculators made 9 or 53% of selections on contextual factors on land subdivisions highlighting the impact of overall plot shape on the sizes of the plots they create. Additionally, brokers and speculators made 8 or 47% of selections on contextual factors on land subdivisions, referring to the impact of topography on land subdivision processes. In Kilungule "A," contextual factors were similarly acknowledged, with the planners, land brokers and speculators emphasizing the effect of overall plot shape on the resulting sizes and shapes of subdivided plots. 2 or 10% of selections were referring to expected number of plots, 1 or 5% of selections on expected size of plots, 8 or 40% on overall shape of plots being subdivided, and 9 or 45% of selections underscoring the significance of topography in shaping the dimensions and configurations of plots produced through the subdivision process.

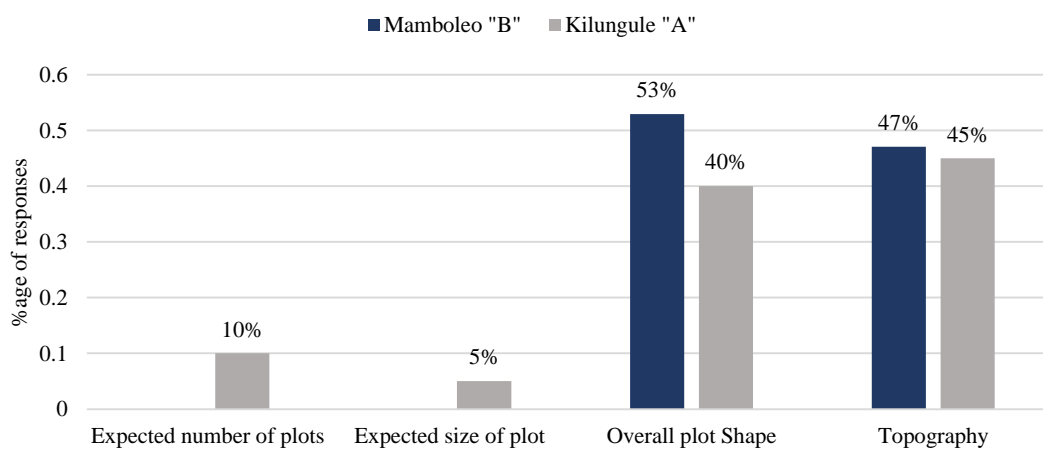


Figure 5:27. Contextual factors impacting the land subdivision exercise
Source: Author field survey, 2021

Contextual factors were also mentioned among the major factors that influence on decisions to construct, improve or not (Figure 5:28). In Mamboleo "B," out of the 19 or 45% of selections on the influence of Contextual factors as a primary influence on their decisions to construct, improve or not, 18 or 95% of the selections focused on environmental risks such as soil erosion, flooding, and air pollution from the nearby Mpogo River. 1 or 5% of selections on the influence of Contextual factors was mentioned to refer specifically to the influence of poor management of wastewater in the area as a discouraging factor to improve their dwellings. In Mamboleo "B," Air from the Mpogo river was carrying the bad smells and moisture with chemicals almost to the whole portion of this settlement. This situation made some dwellers leave the place, discouraging newcomers to this place, and those staying too close to the river hesitated to replace the roofing iron sheets. When the residents along the Mpogo river replace roofing iron sheets, they end up rusting in a short duration since their installation.

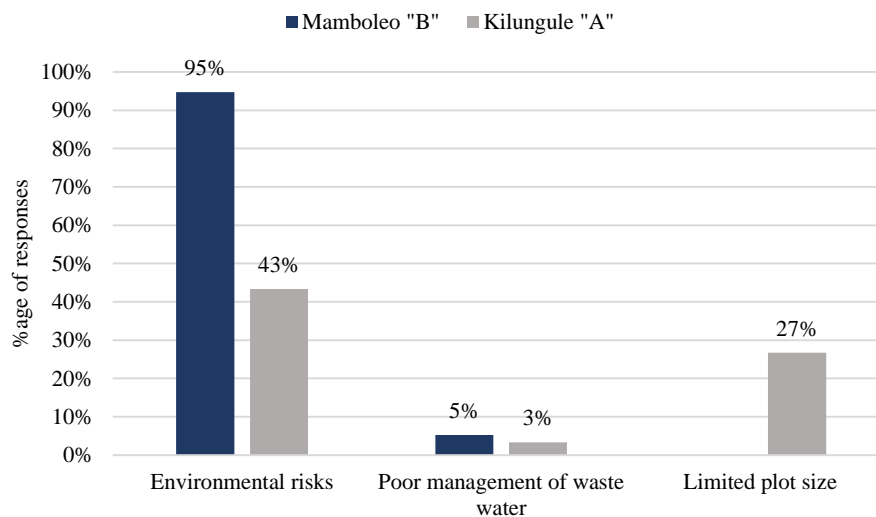


Figure 5:28. Contextual factors impacting the decisions to construct, improve or not
Source: Author field survey, 2021

However, the DMDP projects have raised hope amongst the dwellers of this place. Some of them have begun replacing the rusted roofing sheets, utilising the spaces along the river for some business activities, etc. This situation is currently changing the image of this area. Current initiatives, such as the widening of Tandika Road and the cleaning and expansion of the Mpogo River under the DMDP, have led to increased land values and prompted residents to consider improving their homes (Figure 5:29 and 5:30). The enhancement of the Mpogo River has not only attracted newcomers but also positively affected those who previously contemplated leaving due to air pollution, rust, and health issues linked to the river. In Kilungule "A," dwelling owners made 26 or 43% of selections related to environmental risks, alongside 16 or 27% of selections regarding limited plot sizes and neighbors' activities, underscoring these as

critical issues affecting their decisions to construct new houses, improve existing ones, or refrain from any construction activities. 2 or 3% of selections on the influence of Contextual factors was mentioned to refer specifically to the influence of poor management of waste water in the area as a discouraging factor to improve their dwellings.



Figure 5:29. New house improvements along the Mpogo River.

Source: Author field survey, 2021



Figure 5:30. New house improvements along the Mpogo River.

Source: Author field survey, 2021

The contextual factors were seen influencing the type and amount of house improvements dwellers make on their dwellings in Mamboleo “B” and Kilungule “A”. In Mamboleo “B”, 2 or 5% of selections were made to refer to the limited plot sizes. Of the 18 or 14% of the selections in Kilungule “A”, 16 or 89% selections were made to refer to the influence of space limitations on the type and amount of house improvements they make, and 2 or 11% of the choices stood for the aspect of proximity to areas of importance. Further, the impact of contextual factors on the quality of buildings they make was noted primarily by local masons in Kilungule "A," who made 4 or 3% of selections, indicating how these factors affected construction quality, particularly due to limited workspaces and restricted access caused by informal structures. Additionally, one land speculator cited topography as a relevant factor influencing building quality.

Contextual factors also played a role in influencing decisions about shared space utilization, with this aspect being observed exclusively in Kilungule "A." Here, dwelling owners made 10 or 8% of selections on contextual factors indicating that land scarcity prompted them to seek assistance from neighbors for various needs, such as constructing pit latrines, storage facilities, and access paths to their plots. Moreover, the influence of contextual factors on place attachment was evident, with dwelling owners making 17 or 13% of selections on contextual aspects regarding this theme (Figure 5:31). Specifically, 5 or 29% selections emphasised the availability of social services and a desire to change their living environment as factors

contributing to their continued residence in the area. In contrast, eight selections highlighted environmental risks, with additional selections addressing limited accessibility to their plots and inadequate plot sizes, all of which could motivate them to relocate in search of more suitably sized and accessible land. 1 or 6% of selections are to change the environment, 1 or 6% of selections are on limited accessibility, and 2 or 12% of selections are on limited sizes of plots (Figure 5:29).

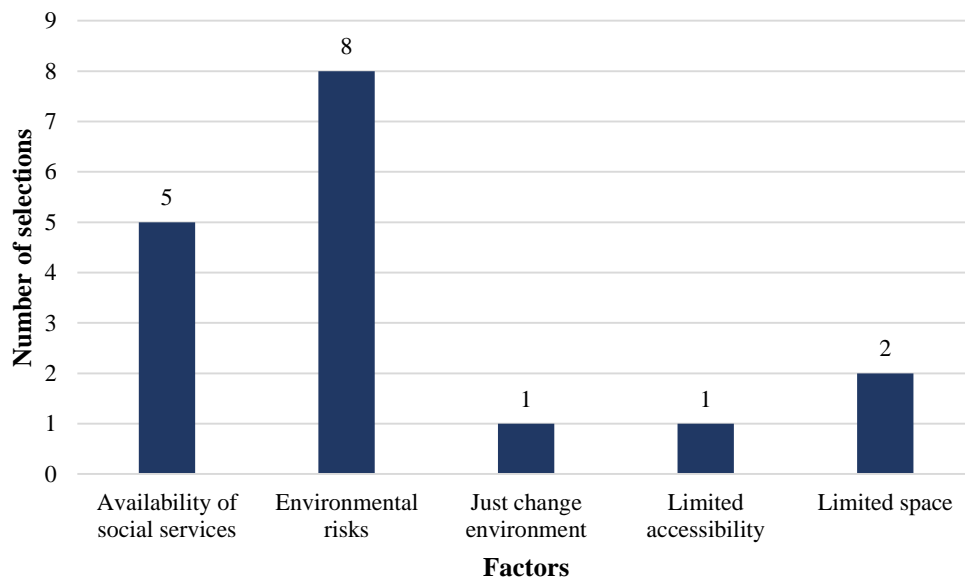


Figure 5:31. Contextual factors impacting the dwellers' place attachment in Kilungule "A"

Source: Author field survey, 2021

5.7 Political Factors

Political factor was also seen influencing the land acquisition and organization of space in Mamboleo "B" and Kilungule "A" (Figure 5:32). The interviewed dwelling owners in Mamboleo "B" made 2 or 7% of the selections on the influence of political factors on urban location choices, 24 or 86% of the selections on their decisions to construct, improve or not, and 2 or 7% of the selections on type and amount of improvements they make on their buildings. Similarly, in Kilungule "A", The interviewed dwelling owners made 2 or 3% of the selections on the influence of political factors on urban location choices, 9 or 16% of the selections on land subdivision exercises, 27 or 47% of the selections on their decisions to construct, improve or not, and 8 or 14% of the selections on type and amount of improvements they make on their buildings, 3 or 5% of the selections on space utilisations and 9 or 16% of the selections on place attachment (Figure 5:32).

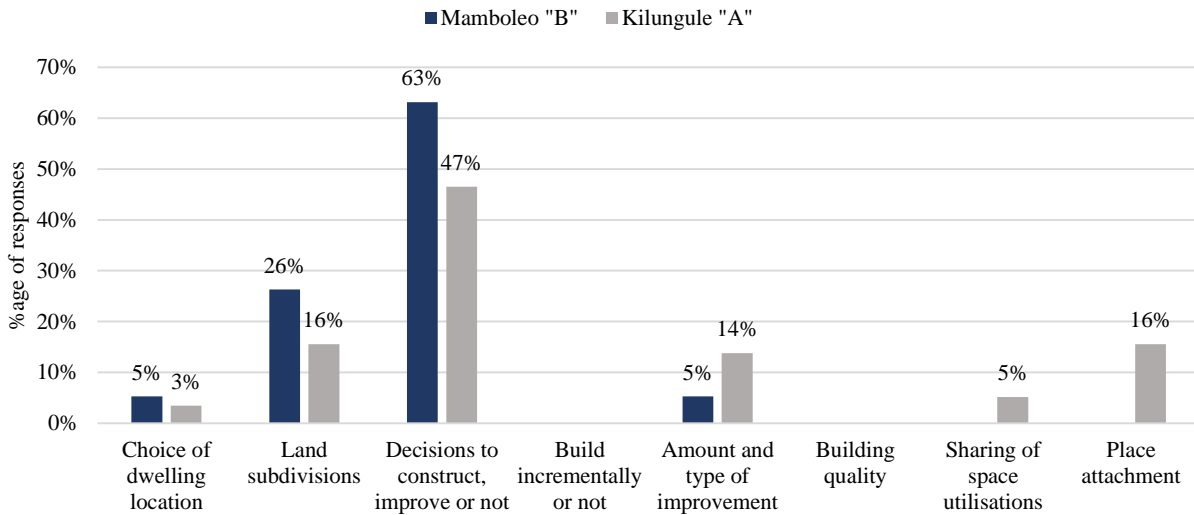


Figure 5:32. Political factors impacting the land subdivision exercise
Source: Author field survey, 2021

The 2 or 7% of the selections on the influence of political factors on urban location choices referred to the government’s failure to provide enough surveyed land. Similarly, in Kilungule “A”, 2 or 3% of the selections were made on the influence of political factors on urban location choices. In Mamboleo B, dwelling owners made 10 selections related to the impact of urban planning regulations on land subdivision. Similarly, in Kilungule “A”, 9 or 16% of the selections are on land subdivision exercises. The 9 or 74% of selections on political factors in land subdivisions indicated how the formalization program influenced subdivision activities, particularly in terms of residents volunteering portions of their land for the construction and widening of access roads as part of the government’s initiatives (Figure 5:33). Additionally, land speculators made 1 selection noting the lack of governmental oversight in land ownership transfers and another regarding conflicts over plot boundaries. They also indicated the effects of urban planning regulations on their land subdivision practices through three separate selections.

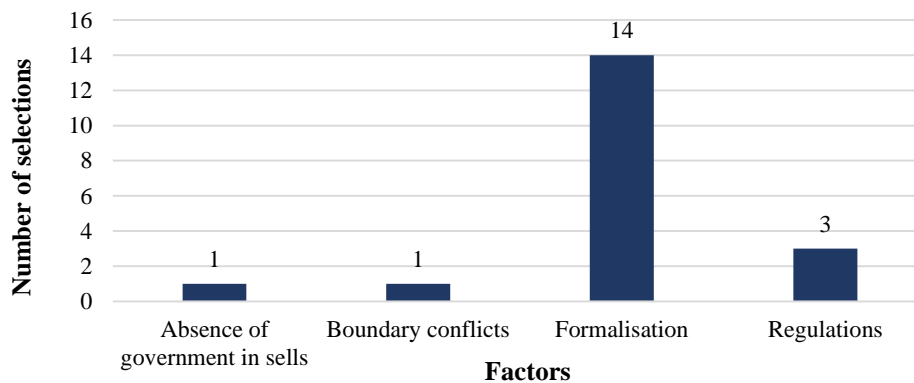


Figure 5:33. Political factors impacting the land subdivision exercise in Kilungule “A”
Source: Author field survey, 2021

Of the 24 the selections on influence of political factors on their decisions to construct, improve or not in Mamboleo “B”, 20 or 83.33% were referring to risks of eviction from the TAZARA administration on their choices to construct, improve or not. 2 or 8.3% selections mentioned existing conflict with the TAZARA administration and other 2 or 8.3% selections mentioned promises from politicians as there are some politicians which promised to end their dispute with TAZARA administration amicably (Figure 5:34). The dwelling owners also made 13 selections on the aspect of formalizations as among the elements that influence the land subdivision exercise. The 3 dwelling owners mentioned the *Ujamaa* ideology as among the factors that contributed to making people share their space utilisation, as the *Ujamaa* philosophy was in the minds of many, particularly those who lived after independence. In Mamboleo "B," dwelling owners made 24 selections, indicating that political factors significantly influence their decisions regarding the decisions to construct, improve or not their dwellings. Among these selections, 20 respondents specifically cited the threat of eviction by the TAZARA administration as a primary concern. Additionally, 2 owners mentioned existing conflicts with the TAZARA administration, while another 2 referred to promises made by politicians to resolve these conflicts amicably (Figure 5:34).

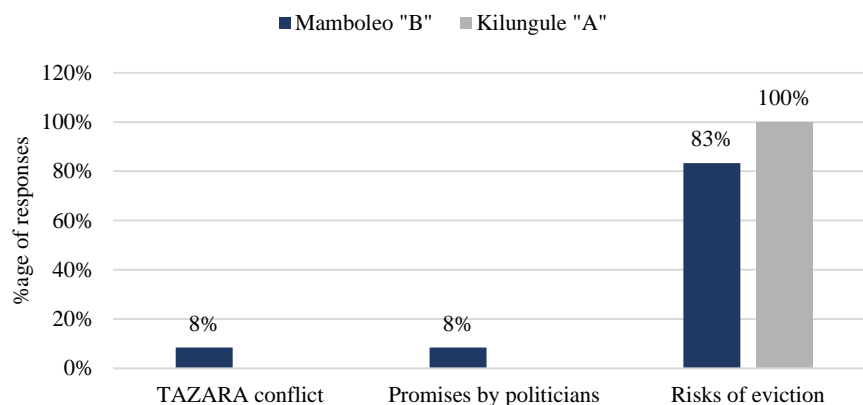


Figure 5:34. Political factors impacting the dwellers’ decisions to construct, improve or not

Source: Author field survey, 2021

Since the *Ujamaa* ideologies lost influence, TAZARA has been urging dwellers staying close to the railway to vacate it, as the area is not safe for human habitation. The TAZARA administration officials and police officers used to visit this place to terrify the dwellers, particularly those who were required to vacate, especially when their case with the TAZARA administration was at its peak. This decree has been rising tensions amongst dwellers of such areas, as a result, some of them leave the place; others remain hesitant to improve their dwellings, while on the other side, developers in the declared safe areas improve their dwelling

units, and rent them. During an interview with one of the respondents⁴⁵ In this place, the following is what he said:

"When our case with TAZARA was going on, many people gave up hope of developing their homes for fear of incurring losses if they lost the case, but after winning the case, many people have woken up to continue their homes, although others have decided to sell and move to another place, especially Chanika, fearing changes in court decisions that may happen in the future"- Mr. Semvua Mvungi.

When the rumours that they won the case began to grow, the residents regained their hope of investing more in housing improvements. 17 selections reflected concerns regarding security risks associated with the land conflict. The risks of evictions contributed to a loss of sense of security in the area and hence residents' hesitancy to invest in improvements, as ongoing and future interventions may lead to the demolition of existing structures in future. During an interview with Mr Nangonga's daughter⁴⁶, the following is what she said:

"The people of TAZARA were coming to arrest people; they were shooting in the air to force people, including us who were residing in the areas deemed unsafe for human habitation, to leave such areas. We were not sleeping for fear of being arrested. Others left during that period but have started to return after hearing that the case is over"

Similarly, in Kilungule "A", 27 or 47% of the selections on their decisions to construct, improve or not, Similarly, in Kilungule "A", all 27 or 47% of selections were made on the risks of evictions specifically the land tenure security and insecurity as a major contributing factor for dwelling owners' decisions to construct, improve or not. The on-site physical observations at the respondent's dwelling compound revealed his improved dwelling together with the added units for rental accommodation (Figures 5:35 and Figure 5:36).

⁴⁵ Mr. Semvua Mvungi interviewed in 2021

⁴⁶ Mr. Nangonga's daughter interviewed in the year 2021



Figure 5:35. Expensive and modern buildings in Kilungule "A".

Source: Author field survey, 2021



Figure 5:36. Expensive and modern buildings in Kilungule "A".

Source: Author field survey, 2021

In Mamboleo "B," 2 or 7% of the selections were made by dwelling owners who specifically linked political factors to the nature and extent of dwelling improvements they were willing to undertake. Conversely, in Kilungule "A," eight dwelling owners referenced political influences related to urban planning regulations affecting their decisions on dwelling improvements, all of which were tied to concerns about eviction. Political factors in the form of building permits were seen to have impacts on dwelling owners' decisions to construct, improve or construct. During physical observations, this study found one frustrated dwelling construction due to a lack of a building permit in Mamboleo "B" (Figure 5:37) and Kilungule "A" (Figure 5:38). Similarly, in Kilungule "A", 8 or 14% of the selections on the type and amount of improvements they make on their buildings.



Figure 5:37. Frustrated fence in Mamboleo "B".

Source: Author field survey, 2021



Figure 5:38. Frustrated fence in Kilungule "A".

Source: Author field survey, 2021

Further, three dwelling owners in Mamboleo "B" mentioned the *Ujamaa* ideology as a contributing factor to shared space utilisation, reflecting the values instilled during the post-independence era. In Kilungule "A", 3 or 5% of the selections on sharing of space utilisation and 9 or 16% of the selections on place attachment. Of the 9 selections, four selections or 44% indicated that prospective interventions encourage them to remain in the area. In contrast, five

or 56% highlighted the risks of eviction as a motivating factor for some individuals to consider leaving (Figure 5:39).

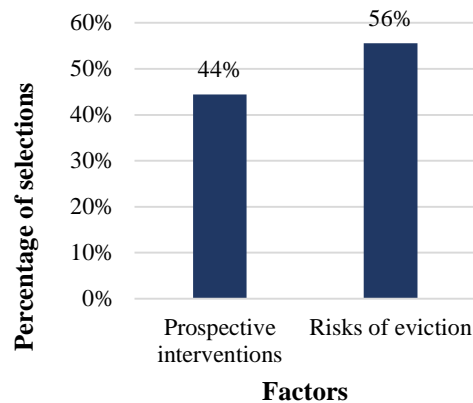


Figure 5:39. Political factors impacting the dwellers' place attachment in Kilungule "A"
Source: Author field survey, 2021

Change in activity locations from different periods within a day or season was among the aspects which were seen to be much influenced by, among others, the time of conducting the activity, i.e. morning, noon, or evening (Figures 5:40 and Figure 5:41)



Figure 5:40. Mere circulation from morning to noon.
Source: Author field survey, 2021



Figure 5:41. Food vending from noon to evening.
Source: Author field survey, 2021

5.8 Emerging contradictions in the systems of production of space

This study observed several contradictions governing changes in the systems of land acquisition and space organisation. These contradictions were location suitability versus affordability, social collectivism versus location suitability, political ideologies versus location choice freedom, financial power versus trustworthiness of information, emergence of brokers versus power of social connectivity, negotiation skills versus obtaining fair price, landowners' calibres versus plots' sizes and settlement layouts, informal negotiations versus transfer of land rights, formalisation versus convenience of ownership transfer, scarcity of funds versus dwelling improvements decisions, property brokers versus dwelling improvements decisions, political

influences versus dwelling improvements decisions, socio-mix versus tradition of sharing that are discussed as follows:

5.8.1 Location Suitability versus Affordability

From the activity triangle depicted in Figure 5:42, this research uncovered three contradictions that resulted in modifications in the activity system of location choice. The first contradiction (circled 1 in figure 5.42) between location suitability and land seekers' affordability was one among three contradictions that were found influencing the land seekers' decisions on the suitable urban location to stay in both Mamboleo "B" and Kilungule "A" settlements. This contradiction meant that the people of these places used to select these areas due to their low purchasing power. Land was affordable to the majority of them at this place. The interview revealed that 61% in Kilungule "A", compared to 46% of responses in Mamboleo "B", were made on the aspect of affordability as a significant cause for dwellers of this place to choose to stay in the area. However, nowadays, the affluent are also increasingly flocking to these areas without regard to the area's suitability. The physical observations in Kilungule "A", particularly in the foreigners' zone of this settlement, revealed new quality and expensive buildings arising. The interviews with the sub-ward officials revealed that most of the dwellers residing in this place, particularly in the Foreigners' zone, are affluent. Similarly, in Mamboleo "B", there are a few instances of expensive buildings. The physical observations found three (03) buildings owned by affluent people.

5.8.2 Social collectivism versus location suitability

In choosing urban locations, the second contradiction (circled 2 in figure 5.42) arose between land seekers, relatives and friends and identifying suitable residential locations. The land seekers become attracted by their relatives and ignore the aspects of the suitability of the location they choose. Dwellers with relationships were found staying in the areas too close to the river Mpogo and the TAZARA railway in Mamboleo "B" and the Kilungule river, which the government prohibits as they are not safe for human occupation.

5.8.3 Political Ideologies Versus Location Choice Freedom

In choosing urban locations, the third contradiction (circled 3 in figure 5.42) arose between the freedom of selecting urban locations among the land seekers and the changes in political ideologies. People were initially seeking land for agriculture, but the changes in political ideologies contributed to changing their motives. This contradiction had an influence only on

Mamboleo “B” compared to Kilungule “A”. The land seekers’ decisions become challenged with political ideologies particularly the *Ujamaa* villagisation campaign which was at its peak in the 1970s in Mamboleo “B”. During the *Ujamaa* period, land seekers changed their minds about seeking land for agriculture to seeking land close to the Independence (TAZARA) railway for residential accommodation together with guarding the same against vandalism and sabotage which prevailed in the 1970s. The desire to guard the railway against vandalism and sabotage pulled many people to reside in this area. This means that the land seekers’ motives of seeking land for agriculture became powerless in the face of the *Ujamaa* villagisation campaign, which, through the project called “*Operation Kando Kando ya Reli,*” or “Operation Alongside the Railway”, forced them to reside alongside the TAZARA railway. However, in 1986, the government of Tanzania transformed its policy from the *Ujamaa* to an economic liberalisation policy. The “Operation Alongside the Railway” lost fame. During economic liberalisation, the government amended the TAZARA law to increase the land size of the rights of way. Some people residing along the railway found themselves within the TAZARA's new rights of way and hence required to vacate. Up to now, the dwellers of Mamboleo “B” staying along the Railway are still in a land conflict with the TAZARA administration.

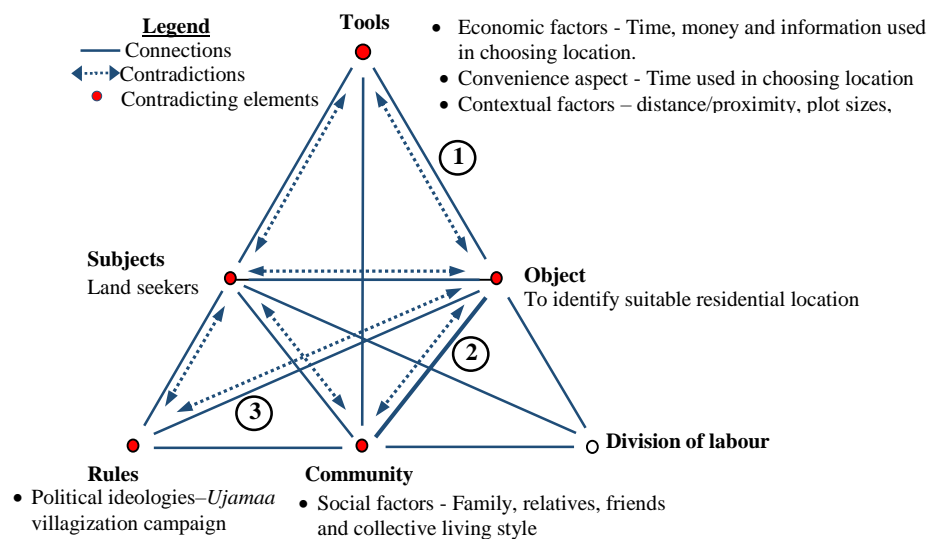


Figure 5:42. The Three Contradictions in choosing an urban location
Source. Author, 2023

5.8.4 Financial power versus trustworthiness of information

While searching for information on plot availability, this study identified two contradictions that were driving changes in the activity system of searching for information on land markets, as shown in Figure 5:43. The first contradiction (marked as 1) emerged among the land seekers,

the resources like funds and time required to find a suitable location, and obtaining trustworthy information on land markets.

5.8.5 Emergence of brokers versus power of social connectivity

The second (2) contradiction when searching for information on plot availability arose between the emergence of brokers versus the power of social connectivity. This means that the land seekers' task of searching for information on the availability of a plot was simplified if the land seekers had relatives or friends passing information to them directly. The land seekers have been relying on social connectivity in searching for information on availability. However, the emergence of brokers has changed the situation. Nowadays, land seekers rely on brokers due to the convenience of getting them and the information. During interviews with residents of Mamboleo "B", it was observed that the land owners have begun to build immense trust in brokers to bring them buyers who will be good people in society, in such a way that they even hesitate to disclose information directly to the land seekers. They believe brokers may be in a good position to know the land seekers and hence may be held responsible whenever a bad land seeker comes.

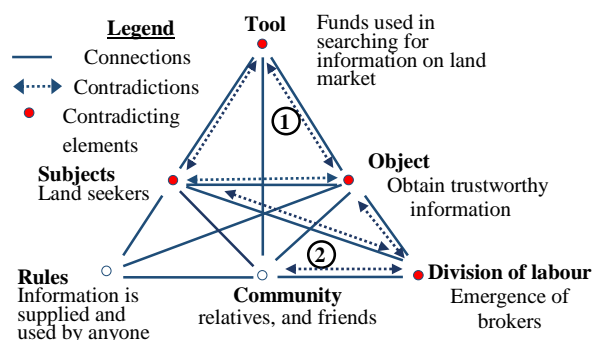


Figure 5.43. Contradiction in the search for information on land markets

Source. Author, 2023

5.8.6 Negotiation skills versus obtaining a fair price

This study identified one significant contradiction (marked as number 1 in Figure 5:44) influencing changes in the activity system of negotiating land transactions. The contradiction emerged between the land buyer's time, negotiation skills, and the ability to secure a fair price for a reasonably sized plot. In Mamboleo B," brokers were found to play a pivotal role in driving up land prices by persuading landowners to charge higher rates. This behaviour is rooted in the brokers' remuneration system, where they earn 10% of the final sale price. As a result, lower land prices directly reduce their commission, incentivising them to prioritise maximising their

earnings over ensuring fair transactions for buyers. This practice has created challenges for land buyers, particularly those with limited financial resources or insufficient negotiation skills, as they struggle to navigate an increasingly inflated market. Furthermore, the influence of brokers in shaping land prices has led to disparities in land affordability, making it difficult for many to find reasonably priced plots. The findings highlight the brokers' significant impact on land market dynamics and their role in reshaping traditional land transaction processes.

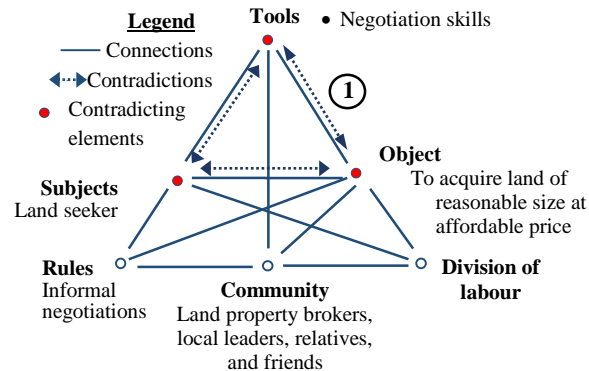


Figure 5:44. Contradictions in negotiating land transactions
Source. Author, 2023

5.8.7 Landowners' calibres versus plots' sizes and settlement layouts

This study identified one contradiction that suggests changes in the current system of plot subdivisions (Figure 5:45). The contradiction (circled 1) arose between the land seeker, the calibres of people subdividing land, and the land seeker's concern to achieve plots of reasonable size that will suffice economic needs when sold. This contradiction indicates that the land seller's decision on plot sizes and shapes depends on his interests, needs, and preferences. The plot subdivision exercise was seen influencing the quality of the resulting plots and the settlement layouts. Initially, land sellers used to subdivide and dispose of their parcels without considering the quality of the layouts they created. However, contemporary land sellers are increasingly concerned with producing better-organised layouts as land seekers demand plots with features such as road accessibility. For example, in Kilungule "A," landowners like Mrs Komba and Mr Mgaluka were observed subdividing and selling their land to create well-ordered layouts accessible by cars, particularly within their dwelling compounds.

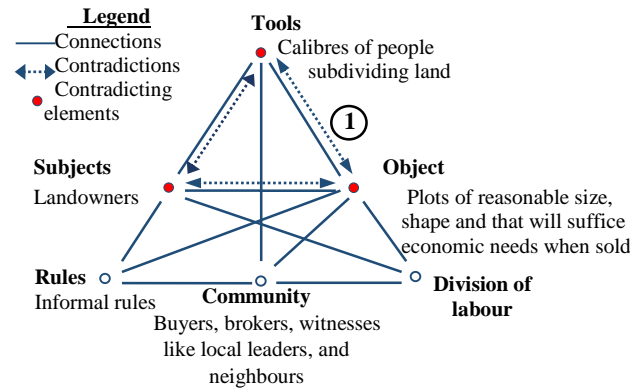


Figure 5:45 Contradictions in the system of land parcelling.
Source. Author, 2023

5.8.8 Informal negotiations versus transfer of land rights

Referring to the activity triangle illustrated in Figure 5:46, this study identifies two significant contradictions that influence the activity system governing the transfer of land rights. The first contradiction (circled 1) arises from the interaction between the land seeker, informal negotiation mechanisms, and the transfer of ownership. Informal negotiations were linked to the emergence of conflicts relating to plot boundaries and ownership.

5.8.9 Formalisation versus convenience of ownership transfer

The transfer of land rights was also faced with the second contradiction (circled 2) in Figure 5:45, which emerged between the land seeker, the formalisation of land ownership that took place in Mamboleo “B” and Kilungule “A” settlements and the convenience of transfer of land ownership that characterised the existing informal system of ownership transfer. This conflict reflects how the freedom and convenience of informal land sales are being challenged by government interventions, particularly land formalisation efforts. Formalisation introduces rigidity, as the fluidity of plot boundaries - common in informal transactions - diminishes. Informal landowners are being granted formal titles, which often require adherence to structured procedures for transferring land rights. These formal processes are perceived as cumbersome and difficult for many informal settlement dwellers to follow. Despite these challenges, interviews with respondents indicated that formalisation has contributed to reducing conflicts related to plot boundaries, with a majority agreeing that it has provided clarity and stability in land ownership.

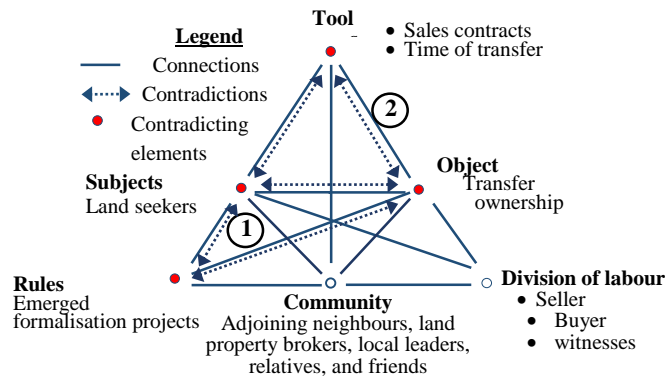


Figure 5:46. Contradictions in the system of transfer of land rights.
Source. Author, 2023

5.8.10 Scarcity of funds versus dwelling improvement decisions

Based on the activity triangle in Figure 5:46, this study revealed three contradictions that suggest changes in the activity system of dwelling construction. The First contradiction (circled 1) arose between the land seekers' scarcity of funds and dwelling construction or improvement. The developer's desire to erect or improve a dwelling becomes challenged with issues of scarcity of funds, soil erosion, floods, and arising needs like family growth.

5.8.11 Property brokers versus dwelling improvements decisions

Dwelling construction activity was also faced with the Second contradiction (circled 2), which arose between land seekers, property brokers, and dwelling construction or improvement. Nowadays, the quality of a building matters in getting renters. Brokers seduce the dwelling owners to uplift the status of their houses with the use of modern building materials like gypsum ceilings, tiles, quality roofing materials like aluminium or tiles, and fencing of their dwelling compounds to enhance security.

5.8.12 Political influences versus dwelling improvement decisions

The third contradiction (circled 3) in Figure 5:47, arose on dwelling construction activity. The contradiction arose between the land seekers' political influences, like risks of evictions, land conflicts, and absence of regulation, as there are no restrictions regarding access to land, type of use and time to commence or complete the activity, and dwelling construction or improvement. When developers aim to invest more to achieve quality houses, they face challenges of evictions, land conflicts, and opportunities like the freedom of construction from the absence of regulations. When there is a low risk of evictions and no disputes relating to land ownership, developers tend to invest more in buying quality building materials and hiring experts than when the risks of evictions and conflicts are higher.

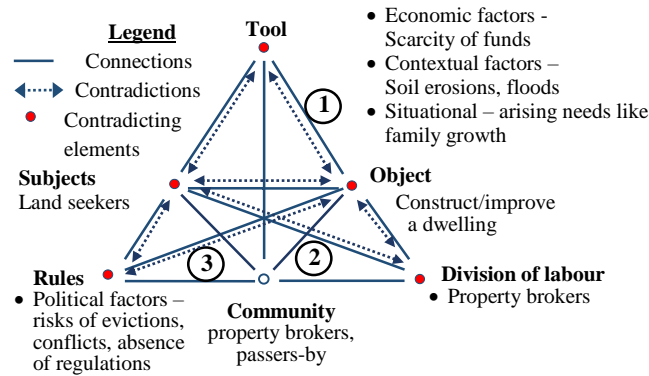


Figure 5:47. Contradictions in dwelling construction

Source. Author, 2023

5.8.13 Socio-economic mix versus the tradition of sharing

In space utilizations, one contradiction was identified (Figure 5:48). The contradiction is between the increase in dwellers' socio-economic mix and the value of the shared spaces. The spaces were traditionally used for activities highly valued by the community. However, the increasing socio-economic diversity resulting from the influx of new dwellers has put these shared spaces at risk of losing their value to the emerging population. These settlements that once housed a few cultural groups are now accommodating people from diverse cultural and traditional backgrounds. Unlike in the past, when friends or relatives introduced new dwellers, most are now brought in by brokers, leaving them with little social connection to the existing community. This growing socio-economic mix has made the shared spaces vulnerable to losing their cultural significance, with practices like traditional dances at risk of disappearing. In Mamboleo "B," the incoming dwellers, from tribes such as Hehe and Nyamwezi, often have cultural practices that differ from those of the original residents. Kilungule "A" is less affected by socio-economic mix, particularly in the foreigners' zone, where cultural diversity has been present for many years. Shared spaces are largely absent in Kilungule "A," especially in these zones.

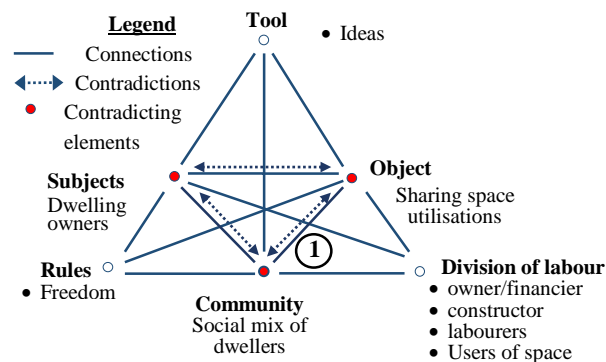


Figure 5:48. Social mix versus sharing of space utilisation

Source. Author, 2023

5.9 Summary

This chapter examines the factors influencing land acquisition and spatial organisation in Mamboleo "B" and Kilungule "A," highlighting the economic, social, political, situational, spatiotemporal, and contextual elements that shape these informal settlements. Economic factors, such as affordability and financial capacity, played a central role in land acquisition and construction decisions. Social dynamics, including family growth, inheritance, and community ties, also guided choices on land use and dwelling improvements. Situational needs, like neighbourhood security and agricultural land, alongside spatiotemporal considerations, such as proximity to work and convenience, further influenced incremental construction practices. Political factors, including land ownership conflicts and formalisation programs, along with environmental risks like soil erosion and flooding, added complexity to the development and organisation of these areas. Further, the chapter underscores how informal negotiations, shared spaces, and adaptive strategies shape the evolving urban landscape in these settlements. It details the various actors involved, including landowners, local masons, brokers, and community members, who contribute to the informal processes of land subdivision, circulation path creation, and dwelling construction. Through a combination of communal cooperation and practical problem-solving, the residents of Mamboleo "B" and Kilungule "A" navigate the challenges of urbanisation, optimising space and resources to meet their evolving needs.

CHAPTER SIX

6 REASONS AND SYSTEMS ADAPTING INFORMAL SPATIAL DYNAMICS

6.1 Introduction

The chapter explores the reasons and mechanisms through which Tanzania has adapted informal spatial dynamics in urban development. The study focuses on two urban areas, Mamboleo "B" and Kilungule "A," providing a comparative analysis of how the Tanzanian government has tolerated and regularised informal spatial dynamics to balance inclusivity and urban resilience. The findings underscore the interplay between formal and informal processes in shaping urban spaces. The study delves into the socio-economic, political, and environmental factors driving this adaptation, alongside the systemic approaches employed to manage the challenges associated with informal settlements. The research highlights the pressures from global policies, government incapacity to regularise informal settlements, urban sprawl, housing shortages, and the rising threat of social divisions as key motivations. Additionally, this chapter evaluates how the government's adaptation approaches, including toleration and regularisation, enable adaptation of the informal spatial dynamics to promote inclusive and sustainable urban forms. By assessing the systems, boundaries, sub-systems, sub-system processes, relationships, feedback mechanisms, attributes, inputs, and common goal (s), and outcomes of these adaptations, the chapter sheds light on the complexities and opportunities associated with managing informal settlements in a rapidly urbanising context. The results in this chapter are organised into four sub-sections. Sub-section 6.1 provides an introduction to this chapter. Sub-section 6.2 provides the reasons that led the government of Tanzania to adopt the informal spatial dynamics. In contrast, Sub-section 6.3 presents the systems that are used to adapt the informal spatial dynamics in Mamboleo "B" and Kilungule "A" settlements, and Sub-section 6.4 provides the summary for this chapter.

6.2 The Reasons to Adapt the Informal Spatial Dynamics

The government had various reasons to adapt the informal spatial dynamics. The interviewed respondents made 11 selections on political reasons, making them the key reasons. The respondents also made 8 on the repercussions of the weak land delivery system in Tanzania, 7 on increased housing shortage amidst financial scarcity, 6 on the deprived urban infrastructure and services, 2 on the challenge of urban sprawl, 1 on each, the informal settlements on high-value land and the threat of the rise of socially divided societies (Figure 6:1.)

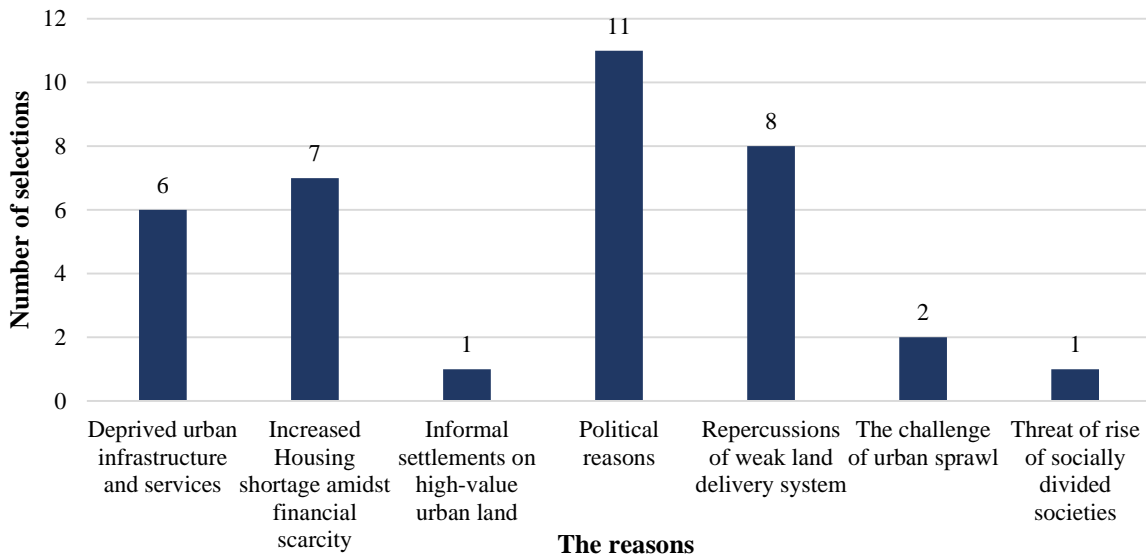


Figure 6:1. The reasons by the government of Tanzania to adapt the informal spatial dynamics
Source: Author, 2024

6.2.1 Pressure from global inclusive policies

Tanzania, as a signatory of the UN Millennium Development Goals (MDGs), has adapted to urban informality to align with the goals outlined in these declarations, particularly those related to urban forms. One key objective of the MDGs is for governments to establish sustainable urban environments that are inclusive and compact, accommodating people from diverse economic backgrounds, including the urban poor, who form a significant proportion of the population. In cities like Dar es Salaam, a substantial part of the urban landscape is composed of informal settlements, which serve as housing for the majority of the city's low-income residents. Eliminating these settlements would risk marginalising a large portion of the population, contradicting the goal of inclusivity. Acknowledging this challenge, and under pressure from global policies advocating for inclusive cities, the Tanzanian government enacted the National Land Policy of 1995. This policy supports the integration of informal settlers into urban areas by prohibiting further demolition of such settlements. During interviews, the Ubungu municipal planner highlighted the National Land Policy of 1995 as a pivotal factor in the government's approach to urban informality, emphasizing its alignment with the inclusive cities paradigm. This policy reflects a commitment to fostering urban environments that do not exclude the urban poor, thereby promoting social equity and sustainability.

6.2.2 Financial scarcity

The government had initially planned to regularise informal settlements as part of its efforts to address urban challenges and promote sustainable urban development. However, due to insufficient financial resources, these plans could not be fully implemented. As a result, the government adopted a pragmatic approach, choosing to tolerate the informal processes of space production along with the associated spatial arrangements that emerge in such settlements. During an interview with a municipal official⁴⁷. It was emphasised that when the government lacks adequate funding to carry out the necessary settlement regularisation processes, such as tenure formalisation and physical upgrading, it opts to allow informal activities to persist temporarily. This approach enables urban areas to continue functioning despite the challenges posed by informality, while the government actively seeks funding and resources to undertake comprehensive regularisation efforts. This strategy reflects a balancing act between managing immediate urban realities and pursuing long-term goals for formalisation and inclusivity.

6.2.3 The challenge of urban sprawl

Dar es Salaam has experienced rapid urban sprawl, raising concerns about its associated negative impacts, such as increased costs for service provision and the loss of biodiversity. In response, the Tanzanian government has implemented several measures aimed at curbing uncontrolled urban expansion and promoting sustainable urban growth. These measures include land planning, surveying, and titling; the regularisation of informal settlements; upgrading of existing neighbourhoods; community-driven land formalisation initiatives; and policy directives encouraging the development of compact cities. To effectively address informal development, the government emphasises the need for settlement upgrading and regularisation to be accompanied by strict enforcement of planning laws and building regulations. Additionally, in areas with significant investment potential, particularly within the urban core, standards for plot density and building height have been adjusted to support upward redevelopment. This has been complemented by efforts to utilise vacant lots in the inner city, promoting infill development and reducing pressure for outward expansion. These initiatives reflect a comprehensive approach to managing urban growth while minimising its environmental and economic costs.

⁴⁷ Imelda Dotto interviewed in the year 2022

The pursuit of a compact urban form is a key objective of Tanzania's formalisation efforts, aligning with broader strategies for achieving sustainable urban development. Compact cities are recognised as practical approaches for fostering sustainability. They are integral to the implementation of Goal 11 of the New Urban Agenda (2030), which emphasises the creation of inclusive, resilient, and sustainable urban environments. The Tanzanian government, through the National Human Settlements Policy of 2000, has actively promoted the development of compact cities. This policy envisions urban settlements that are well-organised, efficient, healthy, safe, secure, and aesthetically pleasing, all while ensuring sustainability. The commitment to compact urban forms is further underscored in the Urban Planning (Planning Space Standards) Regulations of 2018, which provide a framework for achieving these goals. Despite these policy initiatives, challenges persist. Weak land management practices over the years have contributed to unplanned settlements, particularly on urban fringes, leading to uncontrolled urban sprawl. Addressing these issues requires strengthened enforcement of land use policies and regulations to guide urban growth toward more compact and sustainable forms.

6.2.4 Increased Housing shortage amidst financial scarcity

The ongoing rapid urbanisation and financial crisis the government is going through, make the government of Tanzania tolerate the informal means of dwelling and space production together with their associated spaces in urban areas. The rapid urbanisation in Tanzania had already stretched the capacity of the government and its urban Local Government Authorities (LGAs) beyond limits, failing the local government authorities to provide planned land, infrastructure and services in sufficient amounts to cope with the growing needs or exercise effective management of urban growth, leading to chaotic, sprawling urban development and land use patterns. During the interview with the Ubungu municipal planners^{48,49} It was revealed that rapid urbanisation, coupled with the government's incapacity to provide housing to the majority of its population, was one of the reasons that led the government to decide to condone the informal construction activities. One of the planners noted further that;

"The rapid growth of the city and the increase in people living in the city and moving to the city have led to a great need for land resources for housing"

⁴⁸ Imelda Dotto

⁴⁹ John Ilomo

The interviews with Ubungo municipal planning officials⁵⁰ Also disclosed that in response to the calls for global inclusive policies and align with the requirements of human rights of right to the city, the government of Tanzania enacted the National Land Policy 1995 which shows the acknowledgement by GoT on the importance of the informal settlements in providing shelter in urban areas, especially to middle and low-income residents paralleled with government incapacity to provide adequate housing to majority of her urban population stated. The 1995 National Land Policy aimed at stopping the ongoing demolition of informal settlements that prevailed in the 1990s. The National Land Policy 1995 acknowledges the contribution of the informal settlements in providing shelter in urban areas, especially to middle and low-income residents. The acknowledgement of the importance of the informal settlements in providing shelter in urban areas, especially to middle and low-income residents, paralleled with the government's incapacity to provide adequate housing to the majority of its metropolitan population, is a major reason that pushed the government of Tanzania to adapt the informal spatial dynamics.

6.2.5 Informal settlements on high-value urban land

Since the 1960s, urban areas occupied by informal settlements have been increasing at a rapid pace. The government noted that most informal settlements occupy strategic prime locations where land and property values are potentially high enough to attract private sector interest. To add value to upgraded settlements in the Community Infrastructure Upgrading Programs (CIUP), the promotion of tenure security was adopted through property formalisation. Various policies, programs and plans were then geared toward raising the value of land in urban areas. The formalisation program mainly focused on identifying properties and issuing residential licenses to curb further densification and improve the security of tenure. The National Land Policy 1995, which prohibited further demolition of informal settlements, went further to promote and ensure a secure land tenure system, to encourage the optimal use of land resources, and facilitate broad-based social and economic development without upsetting or endangering the ecological balance of the environment. The Dar es Salaam Master plan of 2016 – 2036 called for the regularisation of the informal city, followed by the redevelopment of urban areas.

⁵⁰ John Ilomo and Imelda Dotto interviewed in the year 2022

6.2.6 Threat of the rise of socially divided societies

The government of Tanzania aims to limit the rise of socially divided societies in the country. Such societies may result from various conflicts, including disputes related to building styles and plot boundaries. After realising that conflicts over plot boundaries, especially in informal settlements, were widespread, the government implemented measures to address the issue. Among these measures was the formalisation of informal settlements, which involved planting beacons to demarcate plot boundaries clearly. During the interviews, all respondents in Kilungule showed an acknowledgement of the advantages of settlements' formalisation in reducing the plot boundary-related conflicts that existed in this area.

The government's efforts were guided by the understanding that secure land tenure is essential for reducing conflicts and fostering harmony within communities. The National Land Policy of 1995 recognised that secure land tenure plays a crucial role in promoting peace, enhancing national unity, and minimising disputes related to plot boundaries. By addressing these boundary conflicts, the government sought to reduce the occurrence of socially divided societies and promote stability in informal settlements. This initiative reflects the importance of land tenure security in mitigating conflicts, ensuring equitable access to land, and fostering social cohesion across urban areas.

6.2.7 Deprived urban infrastructure and services

The government had a tradition of not putting much effort into offering services in informal settlements. With time, the urban informal settlements became areas characterised by poor infrastructure and services – a situation which was putting the urban dwellers at risk of diseases and other calamities like fire outbreaks. During interviews with the municipal authority officials in Ubungo and Temeke, it was observed that physical regularisation aimed at making rehabilitation of the main access roads to improve the integration and connectivity of these areas to the larger urban fabric and increasing community services and fundamental infrastructure such as roads, rainwater drainage channels, schools, and marketplaces. The internal access roads have been widened to increase permeability and accessibility to every part of this settlement. During an interview with one officer,⁵¹ he said the DMDP projects' objective was to improve urban services and institutional capacity in the Dar es Salaam Metropolitan Area and to facilitate potential emergency response. The improvement of the Surface Water Drainage

⁵¹ Mr. Kweyam is the quantity surveyor at Temeke municipality DMDP section. Interviewed in the year 2024

System on the Mpogo River was aimed at mitigating and/or preventing serious consequences arising from regular flooding. The Mchicha road was aimed at decongesting the Mandela and Nyerere road Junction (National Malaria Control Program, 2011).

6.2.8 Repercussions of a weak land delivery system

The government's tolerance toward informal housing and space production arises as a consequence of delays in implementing planned urban development schemes. This tolerance is widely recognised as a reaction to its own shortcomings in timely execution and resource allocation, resulting in an acute mismatch between housing demand and supply in urban areas. According to urban planners interviewed, the decision to accommodate informal spatial developments is rooted in the government's failure to proactively supply surveyed land parcels equipped with necessary infrastructure. In Dar es Salaam, the rapid pace of population growth and urban migration creates substantial pressure on the housing market, exacerbating the inadequacies of formal planning processes. Consequently, informal settlements have emerged as a practical alternative for residents unable to access affordable or adequately serviced plots through formal channels. This phenomenon reflects a systemic issue within the urban planning and land management framework, where the inability to deliver pre-planned and infrastructure-supported parcels has inadvertently legitimised the informal sector as a crucial, albeit unintended, contributor to urban growth. During interviews, one Temeke municipal planner⁵² Said that:

“Poor land delivery systems, not affordable to the people, have given rise to the emergence of quasi-land delivery systems, informal land delivery systems and spatial development without adhering to control guidelines”.

One urban Planner⁵³ highlighted that the delayed provision of planned land to developers has significantly influenced the government's decision to tolerate informal developments. She emphasised the critical need for early, proactive urban planning, particularly given the rapid pace of population growth. She noted that delays in supplying formally planned land have left developers and prospective homeowners with limited access to regulated spaces, forcing them to turn to informal means of land acquisition and development. During interviews with planners from the Ubungu municipality, this perspective was reinforced. The planners acknowledged

⁵² Mwinyi Ally interviewed in the year 2021

⁵³ Tumwamini Mbena interviewed in the year 2021

that the government's tolerance for informality stems mainly from its own shortcomings, as these delays directly hinder individuals' ability to engage in formal construction practices. In Ubungo, the lack of accessible, planned plots coupled with an accelerating population increase has created a growing demand for housing that formal planning channels have been unable to satisfy. The planners further observed that the government's tolerance of informal construction practices reflects an implicit acknowledgement of the structural limitations within formal systems, which have struggled to keep pace with urban expansion. One of the Ubungo municipal planners⁵⁴ said that:

"The delay in the implementation of land plans and urban development (Detailed planning schemes) led to the development of areas that do not comply with existing plans, that is, informal constructions"

Another municipal planner⁵⁵ Added that, *"the delay in planning and survey of the plots whereby most of the land in Dar es Salaam is unplanned and is already occupied by people"*. The urban planner also added that the majority of people occupying unplanned land in the city are low-income people who cannot afford the surveyed plots; as a result, they purchase land in informal areas.

6.3 The systems used to adapt the informal spatial dynamics

6.3.1 Adaptation Systems' Boundaries

The Boundaries of the adaptation of informal spatial dynamics were defined. This study confined itself to the adaptation of informal spatial dynamics within a specific time frame. In both settlements, this study was restricted to all government adaptation attempts that have taken place since the enactment and implementation of the National Land Policy of 1995, as well as the rebirth of the local government and their occupation in urban areas. In 1995, the government began to seriously embrace and engage with informality by prohibiting further demolition of informal settlements, unlike in previous years. Through her local government authorities at ward and sub-ward levels, the government also began to practice minimum control of spatial development activities, such as land acquisition and dwelling construction, at this place, thereby implementing the Urban Planning Act. 2007 requires informal settlements to be substantially developed before being regularised or upgraded. The local government is now managing the implementation of the National Land Policy 1995 by ensuring that no informal area demolition

⁵⁴ John Ilomo interviewed in the year 2021

⁵⁵ Imelda Dotto interviewed in the year 2022

occurs in their areas of jurisdiction and by enforcing the Urban Planning Act. In 2007, it was ensured that spatial development in urban areas, whether formal or informal, is controlled through the engagement of various spatial development control measures and tools, such as urban planning regulations and building permits.

The only criteria used for assessing the adjustment of informal spatial dynamics in Mamboleo “B” and Kilungule “A” were the regularisation of settlements and the toleration of informal spatial production. The assessment covered specific informal spatial production activities such as the construction of houses, the purchase of land and the use of unused land. Although Kilungule 'A' has adapted by allowing for informal spaces since 1995, when the national land policy was adopted, this study focused on adaptation efforts from 2016 to 2020, as this was the year in which formalisation and therefore adaptation efforts in Kilungule 'A' began. 2020 marked the beginning of this empirical research and the formalisation of the settlement through the issuance of residence certificates. However, the scope of the study was limited to government tolerance and adaptation programmes affecting urban forms. Unofficial methods used to create living spaces have led to spatial dynamics that have been adapted to suit these environments.

6.3.2 Adaptation Subsystems

The two main subsystems of informal spatial dynamics adaptation were settlement regularisation (tenure and the physical regularisation of the settlement) and tolerance, which involves allowing the informal activities of space production to continue unhindered. To achieve tolerance, the informal developers were allowed to carry out construction without having to follow official approvals and urban planning rules, specifically building permits. Tenure and settlement physical regularisation activities made up settlement regularisation. The goal of the tenure regularisation initiative was to provide informal landowners with official recognition by granting them certificates of right of occupancy. Kilungule "A" was the only area where tenure regularisation occurred. Interviews with the municipal planner for Ubungo revealed that formalisation occurred between 2016 and 2018. Physical regularisation occurred in Kilungule "A" as well as Mamboleo "B.". To improve accessibility and connectivity within the neighbourhood and with the greater city fabric, it was necessary to upgrade the road infrastructure. Additionally, it entailed enlarging interior circulation routes and major access roads. Physical regularisation in Mamboleo "B" included tarmacking and widening Tandika Road (orange lines in Figure 6:2) as well as cleaning and enlarging the Mpogo River (dark blue line in Figure 6:2). This river's water was contaminated by industrial chemicals, which also

caused air pollution and accelerated rusting and production of unpleasant odours, especially on buildings near the river. Some residents wanted to leave the area because of these difficulties, but they were unable to do so because they lacked the funds to purchase new property in other parts of the city.



Figure 6:2. Mchicha road portion and Mpogo river locations in Mamboleo “B”.

Source: Google map, 2024

The widening and tarmacking of Tandika Road, along with the cleaning and enlargement of the Mpogo River, were carried out as part of the larger Dar es Salaam Metropolitan Development Project (DMDP), which encompasses the entire city. This continuing development project aims to strengthen Dar es Salaam City’s institutional capabilities and urban services. The development of the surface water drainage system in the city is one of the seven complementing projects of the DMDP. The road repair plan includes all national highways managed by the Tanzania National Roads Agency and additional local roads under the Dar es Salaam City Municipalities. As implementing agents of the DMDP projects, the President’s Office of Regional Administration and Local Government and the Local Government Authorities of Temeke, Kinondoni, and Ilala carry out the project. Improvements to the Surface Water Drainage System were made in Mamboleo “B” at the Mpogo River, a tributary of the larger Yombo River that feeds into the Indian Ocean. The Mandela and Nyerere roads, two important trunk highways in Dar es Salaam, as well as a section of the Mchicha road, which connects Temeke and Ilala settlements, underwent road construction (Figure 6:3). This road section was improved during the first phase of the Dar es Salaam DMDP project’s implementation.

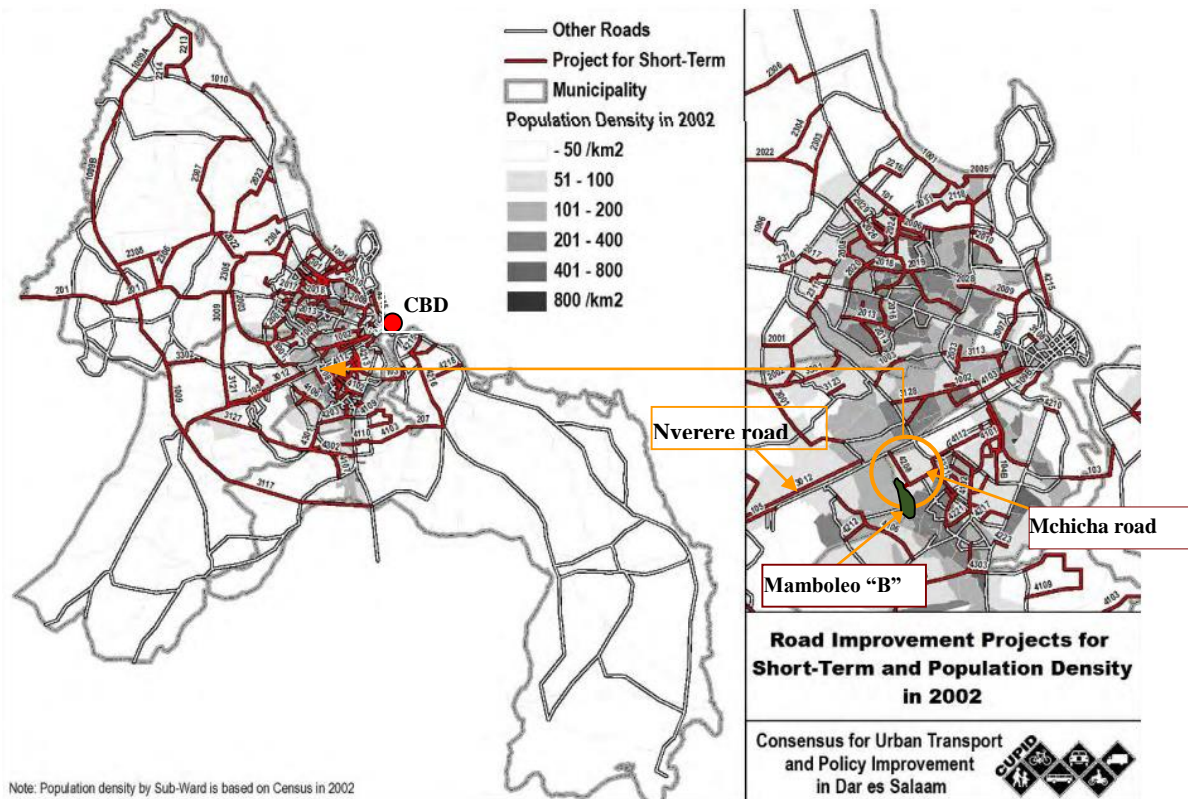


Figure 6.3. Location of Mchicha Road in Dar es Salaam
Source: <https://openjicareport.jica.go.jp>

Kilungule "A" was also included in the DMDP projects, where physical regularisation involved improving the road system to improve accessibility and connectivity both within the neighbourhood and with the rest of the city. Major access roads and internal circulation routes had to be widened as well. During the Dar es Salaam Metropolitan Development Projects, the main access road in this area, *Maji Chumvi*⁵⁶- Kilungule Road was tarmacked, widened, and improved.

6.3.3 Processes involved in Adaptation

Informal spatial dynamics have also undergone several adaptation processes. Together with their respective municipal planning authorities, Mamboleo 'B' and Kilungule "A" decided to remain silent and to allow the informal space production processes to continue unhindered until the disputes over land ownership and zoning were resolved. Without obtaining the permission of the local government, the landowners were free to continue to sell and divide their land. They were also left to conduct building construction activities without formal approvals, such as building permits, from local authorities. As in formal settlements where building material rules are applicable, no restrictions were imposed on the standards or quality of building materials

⁵⁶*Maji chumvi* is a Swahili name of a place which translates as 'Salty water' in English (own translation)

used in construction. Depending on the developers' tastes and financial means, some included architectural blueprints and experts, others did not. In the latter case, there were no restrictions on the hiring of technical experts, so that construction could begin with or without a plan. Before the actual construction process begins, the owner of the land may hire a professional to draw up the plans, such as an architect, a planner, a mechanical engineer or a local mason. At a later stage, the owner may decide to work on the construction himself or may call on the help of family members or local tradespeople. As long as they have the necessary funds and demand for construction, developers can start or complete construction projects at any time. On their land, developers take independent decisions on housing conversion projects such as additions, extensions, and even building new buildings.

According to information gathered from interviews with Ubungo municipal planning officials, the formalisation of the settlement in Kilungule 'A' involved the identification and registration of land parcels, surveying, titling and provision of basic services. The on-the-spot activities included the recognition of existing land boundaries, the mapping of the map, the installation of lighthouses, the examination of regularisation plans and the maintenance of regularisation and survey plans. Physical regularisation focused on the spatial restructuring of the settlement. The first step in this process is usually the acquisition of land to provide infrastructure. To build social facilities and services, the planners had to negotiate with some of the inhabitants to get the land. The improvement of the Mpogo River in Mamboleo "B" involved the improvement of the Surface Water Drainage System in the Mpogo River, which involved two main stages, namely: stage I (a and b) and stage II. Stage Ia: which involved the preparation of the Drainage Plan and Pre-Feasibility Study; Stage Ib: Feasibility and Preliminary Engineering Designs; and Stage II, which delved into availing the Detailed engineering designs (URT, 2014). Improving the Surface Water Drainage System in the Mpogo River included six main activities: widening and deepening the river channel through initial dredging; constructing flood control terraces, sediment traps, and riverbank stabilisation infrastructure; enhancing local drainage in neighbouring areas; conducting analytics and designing feasibility studies, detailed designs, and resettling directly impacted households within the project target area. The project implementation occurred in two stages. The first stage involved developing the Drainage Plan and conducting a Pre-Feasibility Study, followed by the Feasibility and Preliminary Engineering Designs. The second phase was devoted to creating comprehensive plans, including a compensation and relocation strategy. To increase the rivers' capacity for drainage and stop flooding from spreading to nearby areas, the first phase of flood control

measures concentrated on on-site preparation. This included moving vulnerable households and physically implementing drainage and flood control projects. Land acquisition along the extended drainage channel was a component of the Yombo sub-project proposal. Before the commencement of the physical works, vulnerable households in the sub-basins, more flood-prone areas, and the target area were relocated and replaced. This resulted in physical displacement of people, loss of shelter, loss of property, temporary loss of income and livelihood, and permanent and temporary restriction of access to land (URT, 2014).

6.3.4 Relationships between the system's activities

Except for tolerating the informal activities of space production, the functioning of the adaptation system was perceived as interdependent. Regularisation and formalisation processes were linked. According to interviews with municipal planners in Ubungo, the activities are carried out sequentially, with formalisation occurring before the actual regularisation takes place. This indicates that no physical regularisation was permitted before formalisation. In addition, the Kilungule "A" urban area needed to undergo physical improvements to regularise the physical infrastructure and formalise the informal property rights of the land. In Mamboleo "B", the activities within the physical regularisation activities were related to one another. The physical regularisation activities were observed as interconnected. These were planned activities. The activities of widening and cleaning the river Mpogo included planning and designing, resettling vulnerable households, and implementing the physical project activities. The Mchicha road upgrade also involved a series of planned activities that were dependent on one another. Municipal official⁵⁷

6.3.5 Adaptation Systems' Feedback Mechanisms

It was also noted that some activities had feedback mechanisms in place, while others did not. The toleration of the informal activities of space production lacked feedback mechanisms, whereas the widening and improvement of the Mpogo River, along with physical regularisation activities, included feedback mechanisms during project implementation. There was no feedback mechanism to tolerate the informal activities of space production, as the activity had no one controlling or guiding it. The physical regularisation activities had a feedback mechanism; however, this was during the project implementation period. The contractor regularly prepares project progress reports for the client (the government of Tanzania)

⁵⁷ Mr. Ally interviewed in the year 2020

throughout the project implementation stages. However, no feedback mechanism was set up after the project was completed to monitor the project's performance and progress. In contrast with adaptation in Mamboleo "B", Kilungule "A"'s adaptation of informal spatial dynamics lacked an adequate feedback mechanism. In interviews, Ubungu municipal planning officials revealed that after a settlement is regularised, they rarely revisit the area to assess the success of the regularisation process. In particular, they do not check whether the people who donated their land have removed any barriers or whether the landowners whose land rights were formalised have all received their certificates of right of occupancy. The municipal planner in Ubungu claims that no monitoring was carried out to assess how well the regularisation methods were functioning. Over time, it has become clear that this lack of feedback has hindered the tenure and physical regularisation procedures. Many landholders who still own land have difficulties in obtaining their occupancy certificates, and some have difficulties in paying the related costs.

6.3.6 Adaptation Systems' attributes

It was discovered that both goal-free and goal-based activities were part of the adaptive system. The objective of the free activity in both Mamboleo "B" and Kilungule "A" was to allow the unofficial production activities in the space to continue without interference. This activity has developed independently and occurs without actors, leadership, or ICT infrastructure. The government, private organisations, or individuals started the goal-oriented activities. The physical regularisation and tenure activities were planned, goal-oriented, and had distinct characteristics. The physical regularisation project and the building of the road that connected Temeke to Mandela Road in Mamboleo "B" had a number of features. In terms of leadership, Nyanza Civil Works, active consultants, oversaw the project's execution. The success of the project was greatly aided by this consultant, a reputable organisation recognised by Tanzania's Ministry of Works and Contractors Registration Board as one of the country's class I civil works contractors. ICT infrastructure was used in both the tenure and physical regularisation procedures. According to an interview with one Temeke Municipal official⁵⁸, the municipal offices had an ICT Unit staffed by knowledgeable people and an ICT infrastructure consisting of computers, local area networks, user identification and authorisation systems, and basic software during the 2017–2019 construction of the Mchicha road. The facilities were deemed adequate and in good condition by the municipal urban planners. M/s PROCESL-Engenharia

⁵⁸ Mr. Ally interviewed in the year 2020

Hidráulica e Ambiental, S.A., was responsible for improving the Mpogo River's Surface Water Drainage System, on behalf of M/s COWI Tanzania Limited. In contrast, the Ubungu Municipal Town Planning Department, working with representatives from Kilungule Sub-ward "A," oversaw and led these organised events in Kilungule "A." While Kilungule "A" sub-ward officials played a crucial role in organising and representing their community, the Ubungu town planners were masters of area planning and ICT technology. As part of the regularisation process, local government officials were in charge of locating, organising, and researching unplanned settlements under their purview. With input from the Ministry of Lands, Housing, and Human Settlements Development (MLHSD), the regularisation teams' plans were finalised. ICT infrastructure was used in both the tenure and physical regularisation procedures. According to an interview with the Ubungu Municipal officials, it was noted that, the municipal offices had an ICT Unit with knowledgeable staff members and an ICT infrastructure that includes PCs, local area networks, user identification and authorisation systems, and necessary software. The municipal urban planners admitted to having adequate and well-maintained facilities when questioned. It was also noted that, TTCL's 4Mbps was distributed by a router installed in the city offices.

6.3.7 Inputs into the system of adaptation

The Government of Tanzania, under the Prime Minister's Office – Regional Administration and Local Government (PMO-RALG), received support from the International Development Association (IDA), which is housed by the World Bank, to prepare an infrastructure for the Mchicha Road improvement project. In Mamboleo "B", PMO-RALG implemented the two projects. One project involved creating priority roads that support public transit, mobility, and connectivity to low-income communities. This component included local and feeder roads improvement for US\$103.86. During the interview with the DMDP quantity surveyor of Temeke municipality, Mr Kweyam, he said that the project covered a portion of the Mchicha road of 1.9 km and incurred a cost of 2.797 billion Tanzanian shillings. The DMDP projects amounted to USD 330.30 million, whereby USD 300 million was contributed by IDA credit, USD 5 million by the Nordic Development Fund, and USD 25.30 million by the Government of Tanzania⁵⁹. The Mpogo River's surface water drainage systems were being improved as part of another project. In contrast, the government invested money, materials, and human resources in Kilungule "A" to adapt the informal spatial dynamics. The government did not invest to

⁵⁹ <https://documents1.worldbank.org> > curated > text

support the unofficial space production activities. According to the interviews with municipal planning officials in Ubungu, significant funding was allocated for the formalisation of land properties and physical regularisation initiatives. When formalisation took place, the government was forced to make labour, material, and financial investments. Roads were tarmacked and improved, teams were trained, regularisation plans and schemes were created, beacons were planted, and awareness campaigns were carried out. These were the real operations that cost money: Plot identification, mapping (deed plans), and issuing Certificates of Right of Occupancy for 6,000 plots totalled TZS 531 million (USD 230,000) for the formalisation process. Interviews with local landowners and Ubungu municipal planning officials revealed that residents were paying a total of 250,000/= ⁶⁰ shillings (USD 93.43) each to expedite the property identification process and 375,000/= (USD 140.15) as a CRO processing fee. The government spent Tshs 7,777,000,000/-, or USD 3,059,860.66, to tarmac, widen, and improve the roughly 3-kilometre Korogwe - MajiChumvi road as part of the physical regularisation process. Furthermore, 30% of landowners donated some of their properties to help fund social services infrastructure⁶¹.

6.3.8 Common goals of adaptation

In both cases, adaptation was seen as having the same objectives. According to an official⁶² interviewed in Mamboleo “B”, the aim of the DMDP projects was to strengthen institutional capacity and urban services in the Dar es Salaam metropolitan area, while at the same time facilitating possible emergency response. The Mpogo River's surface water drainage system has been improved to mitigate and, if necessary, prevent the major consequences of frequent flooding. Regularization sought to facilitate the residence of the poor in urban areas by strengthening housing security and promoting inclusive urban forms. In order to increase the integration of the region and its link to the broader urban fabric, the area has been physically regulated, in particular by the rehabilitation of the main access roads. The internal access roads were extended to make all areas of the settlement more accessible and permeable. According to the report on the National Malaria Control Program of 2011, Mchicha Road was designed to ease traffic congestion at the intersection of Mandela and Nyerere Roads. According to interviews with municipal planners⁶³ from Ubungu, with the 1995 National Land Policy, adaptation of the informal spatial dynamics was required to stop the razing of informal

⁶⁰ 1 USD = 2647.18 TZS as per Bank Of Tanzania (BOT), 8th July 2024

⁶¹ www.tanroads.go.tz › projects

⁶² Mr. Kweyam is the quantity surveyor at Temeke municipality DMDP section. Interviewed in the year 2024

⁶³ John Ilomo and Imelda Doto interviewed in the year 2022

settlements that were continuing all over the country. It has been noted that informal space-based manufacturing activities are tolerated when the government lacks the resources to enforce the rules governing the settlement of space-based activities.

6.3.9 The Impacts of Adaptation on Urban Form

The following are some of the effects of the regularisation of settlements and the acceptance of informal space production activities on the urban forms of Mamboleo “B” and Kilungule “A”.

6.3.9.1 Persistence of informal production of space

The persistence of informal norms for space creation was facilitated by the tolerance of the informal activities involved in space production. As long as there were no disputes over plot boundaries, developers kept constructing in any way they could. Additionally, they continued purchasing land parcels without formal documentation and constructing homes without permits, blueprints, or the assistance of technical professionals like engineers, planners, and architects. Others persisted in sharing space usage and acting in an untimely, incremental manner. Interviews with homeowners in Kilungule "A" showed that 29 out of 30 respondents, or 96.67%, had built their homes without permits, and 27 out of 30 respondents, or 93%, had purchased land informally. About 93% of the respondents, or 28 out of 30, built their homes without the use of technical experts like engineers, planners, or architects, or without the use of drawings. Approximately 93 % of respondents, or 28 out of 30, built their homes gradually and late. About 80% of the interviewed homeowners, especially those living in the Indigenous zone, said they share their spaces with others in 24 out of 30 cases. Public gatherings and permitting people to move through the unconstructed areas were among the shared activities.

6.3.9.2 Mixture of ordered and unordered layout configurations

The toleration of the informal activities resulted in the emergence of both ordered and unordered layouts in Mamboleo “B” and Kilungule “A”. In Mamboleo “B,” tolerance resulted in unordered layouts (Refer to Mr Mzuzuri’s land parcels). During interviews with Mr Mzuzuri, it was observed that he did not plan on achieving any kind of organisation; instead, the layouts emerged accidentally. In Kilungule “A”, some ordered layouts were seen beginning to occur, existing together with the old unordered ones (Figure 6:4 and Figure 6:5). The physical observations assisted by Google Maps revealed three well-ordered settlement layout configurations in this informal settlement. The relatively ordered layout resulted from the efforts and wishes of individual landowners, supported by buyers' preferences for plots that

were easily accessible by car and suitable for the easy installation of community services. Mrs Komba spoke about her case and said, *“I fenced this property when I bought it in 1992. To meet the various needs that arose at that time, I sold part of my land in 1995. I have deliberately systematically divided my land so that those who buy it will build their houses in a well-organised manner”*. According to further interviews with the local authority, the landowners had improved the orderliness of the layout after having problems with the previous chaotic layout (see unfenced area in figure 6:4), which made it difficult to link up the community services.



Figure 6:4. Mr Mgaluka's original unordered and newly ordered layouts in Kilungule "A"
Source: Google Maps, 2022



Figure 6:5. Regular patterned layouts at Mrs Komba's place in Kilungule "A"
Source: Google Maps, 2022

6.3.9.3 Plots of extremely varying shapes and sizes

Secondly, tolerating the informal activities of space production led to the emergence of plots of varying shapes and sizes, as individual landowners subdividing land typically have different interests, needs, and preferences. Figure 6:6 and 6:7 show plots with sizes ranging from 74m² (plot no.25) up to 4428m² (plot no.55), respectively, that were observed at Kilungule "A". Further, toleration of the informal activities of production of space increased the informal spaces. It has contributed to the emergence of plots of varying shapes and sizes as the individual landowners subdividing land were typically of varying interests, needs, and preferences.



Figure 6:6. Extremely small-sized plots at Kilungule “A”
Source: Kinondoni Municipal Council, 2016

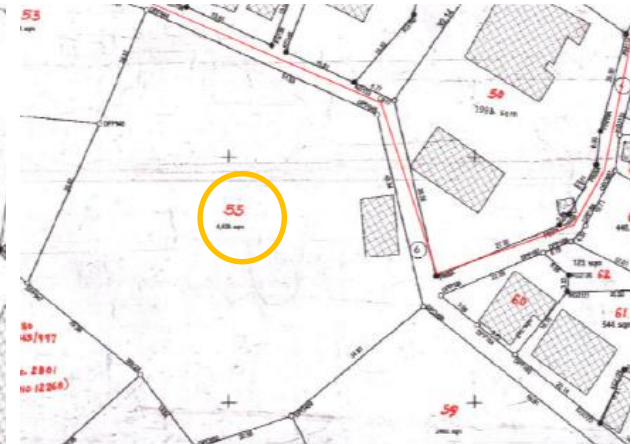


Figure 6:7. Massive plots at Kilungule “A”
Source: Kinondoni Municipal Council, 2016

6.3.9.4 Unguided mixed-use developments

The plots have suggested a mixed land use development in this area by incorporating buildings of varying functions. The on-site observations, assisted with the Google images and informal interviews with dwelling owners both in Mamboleo “B” and Kilungule “A”, revealed some commercial, religious, and even institutional buildings existing together with the residential ones in these areas. In Mamboleo “B”, the buildings included the community service buildings such as the Anglican church, the TAYMA dispensary, and the kindergarten school. In contrast, in Kilungule “A”, there were buildings such as the Arrahmaan mosque, the Roman Catholic Church, and the Nazarene church.

6.3.9.5 Shared spaces

The toleration of the informal activities resulted in the formation of shared spaces. The owners of the shared spaces allow public activities like political and religious congregations to take place within their unbuilt spaces. The on-site physical surveys in Mamboleo “B” also revealed four types of shared spaces. Shared areas between adjacent buildings are created when the owners of adjoining units allow the public to use part of their land as a pathway to another location. Additionally, when the landowner leaves a small portion of their land for their neighbour to build a soak pit next to a dwelling unit, it contributes to the shared area. The fourth category consisted of shared areas utilised for group activities. The visual inspections in this region identified four (04) communal areas, marked by the orange circles in Figure 6:8. These areas host both private and public events, such as traditional dances and religious and political gatherings, in accordance with agreements made with the space owners.



Figure 6:8. Circled spots showing locations of the Shared spaces in Mamboleo “B”.

Source. Fieldwork, 2022

The physical observations in a particular portion of Kilungule “A” (Figure 6:10) revealed two shared spaces (Figures 6:9 and 6:11) due to the informal sharing of space usage. The owners of the shared spaces allow public activities like political and religious congregations to take place within their unbuilt spaces.



Figure 6:9. Mr Chuma’s compound
Source: Author Field observations, 2021



Figure 6:10. Location of shared spaces in Kilungule “A”’s map
Source: Google map and author, 2024



Figure 6:11. Mr Pulu’s compound
Source: Author Field observations, 2021

The challenge of surface rainwater has resulted in the formation of spaces serving varying purposes. The physical observations have revealed two structures of this kind: the paved circulation spaces (Figure 6:12) in Mamboleo “B” and the extended plinth walls (Figure 6:13) in Kilungule “A”. Additionally, Figures 6:16 and 6:17 in Mamboleo “B” illustrate these structures. This place is located on sloped terrain, with loose sandy soils covering it. During rain, most of the sand is carried downward to the river Mpogo, and the surfaces of the plinth walls are eroded. This challenge has prompted dwellers to find their own way of dealing with it. They construct sand-cement finished drainage channels on spaces left between buildings and

protect the plinth walls from erosion using the so-called ‘*Kiuno*.⁶⁴’ if single and ‘*Viuno*’ if many. These are horizontal extensions of plinth walls, creating a structure that resembles a flower bed on the exterior wall's face. ‘*Viunos*’ are designed to protect the dwelling units’ exterior walls from soil erosion caused by water flowing along the walls, especially during rainy seasons.



Figure 6:12. Mr Puluku’s compound
Source: Author Field observations, 2021



Figure 6:16. Cloth and dish washing on ‘*Kiuno*’
Source: Author Field observations, 2021



Figure 6:14. Location of shared spaces in Mamboleo “B”
Source: Google map



Figure 6:15. Location of shared spaces in Kilungule “A”
Source: Google map, 2024



Figure 6:13. Mr Puluku’s compound
Source: Author Field observations, 2021



Figure 6:17. Cloth and dish washing on ‘*Kiuno*’
Source: Author Field observations, 2021

The paved circulation spaces function as drainage channels during rainfall and as circulation paths when they dry. Meanwhile, the extended plinth walls protect the plinth from erosion caused by surface rainwater and also serve as outdoor seating and worktops for activities like dish and cloth washing. In this place, circulation spaces such as dedicated paths for circulation, spaces between dwellings and dwelling compounds and other unbuilt spaces, accommodate a variety of activities. Figure 6:18 shows the sale of fried chicken meat in the space between buildings. This activity begins from noon to night. From morning to afternoon, this space is used for circulation. One will find people passing on it. Figure 6:19 shows an unbuilt space that typically accommodates food vending activities from noon, similar to the case in Figure 6:18.



Figure 6:18. Food vending in circulation paths/spaces between buildings.
Source: Author Field observations, 2021



Figure 6:19. Food vending— a dining table placed temporarily on outdoor pace during lunch time.
Source: Author Field observations, 2021

⁶⁴ ‘*Kiuno*’ is a Swahili word translated as ‘waist’ in English. ‘*Viuno*’ is a plural form of ‘*kiuno*’.

6.3.9.6 Diverse physical images in one settlement

In Mamboleo “B”, physical regularisation, particularly the infrastructure upgrading programs, have raised hope among the dwellers to continue staying in the area and attracted newcomers. Investments in house improvements and the construction of new dwellings along the Mpogo River are evidence of the revived hope Figure 6:20 and 6:21 in Mamboleo “B”. 6 out of 26 interviewed dwelling owners mentioned this aspect, explicitly referring to current infrastructure improvement projects taking place under the Dar es Salaam Metropolitan Development Projects as among the issues that encouraged them to uplift their dwellings’ physical statuses and even add up new units in their plots that can be used for rental business. The DMDP projects, among others, have revived the concern amongst dwellers to uplift the status of their dwellings, where some are building new units to be used for rental business for prospective renters in the foreseeable future.



Figure 6:20. New house improvements along the Mpogo River in Mamboleo “B”

Source: Author field observations, 2021



Figure 6:21. New condition of the Mpogo River in Mamboleo “B”

Source: Author field observations, 2021

The regularisation of settlements had an impact on urban form. Only Kilungule "A" saw tenure regularisation, especially the designation of livable areas, which reduced residents' sense of tenure security and, as a result, either increased or decreased investment. Interviews revealed that 16 out of 30 respondents, or 53% of the total, were reluctant to upgrade their homes because they intended to leave the area, especially those residing in restricted regions, such as flood-prone areas. Conversely, residents of the habitable zones have been more inclined to make larger investments to consolidate their residences due to the increased sense of tenure security. Compared to their counterparts in the inhabitable areas, residents of the habitable zones make greater investments in building new homes and renovating existing ones. Physical observations conducted on-site in Kilungule "A's" habitable zones showed a few opulent, contemporary

structures (Figure 6:21). According to an interview with one.⁶⁵ Of the owners of the modern buildings, a feeling of tenure security has motivated them to make greater investments in renovating the older homes and constructing new ones for rental use (Figure 6:22).



Figure 6:22. The affluent homes in Kilungule “A”.
Source: Author Field Observations, 2021



Figure 6:23. High investments in improvements in Kilungule “A”.
Source: Author Field Observations, 2021

6.3.9.7 Frustrated circulation paths

Secondly, physical regularisation, among others, has also contributed to the emergence of impassable frustrated circulation paths due to unremoved obstacles in this area. In Dodoma (Figure 6:25), a frustrated street, three properties (Figure 6:24 and Figure 6:25) whose owners were already compensated but could not remove or demolish them by their agreements with the sub-ward government were identified through physical observations augmented by interviews with local leaders and one resident⁶⁶. Further, the regional leaders⁶⁷ revealed that the property owners’ compensations were insufficient to accommodate the demolition of the old structures and move to start a new life, including building a new house.



Figure 6:24. Soakaway pit blocking access
Source: Author Field Observations, 2021



Figure 6:25. Kilungule “A” part-map
Source: Google Maps, 2023

⁶⁵ Mr. Lusumo interviewed in 2022

⁶⁶ Mr. Ramadhani interviewed in the year 2022

⁶⁷ Mr. Maganga interviewed in the year 2022

6.3.9.8 Informal activities within the regularised spaces

Thirdly, the physical regularisation also contributed to the re-infiltration of improved spaces with new informal activities. Street vendors are informally building temporary kiosks on improved Kilungule road spaces (Figure 6:27) in Kilungule “A” (Figure 6:26). During interviews with one of the local leaders⁶⁸. It was apparent that Kilungule “A”’s sub-ward government allows the vendors to temporarily locate their kiosks in their preferred areas within the road reserves while vacating the areas when the government needs to develop them.



Figure 6:26. Kilungule “A” part-map
Source: Google Maps, 2023



Figure 6:27. New informal business kiosks along improved Kilungule road
Source: Author Field Observations, 2021

6.3.10 Systems’ efficiency

In Mamboleo B," the physical regularisation was viewed as somewhat ineffective. One officer⁶⁹ discussed project time overruns brought on by poor contract management during an interview. Since the projects were behind schedule, at least three extensions of time were ultimately granted. The extra work, design changes, and late IPC payment also caused the delay. However, the project has suffered as a result of the contractor's lax enforcement of work delays and the consultant's failure to direct the contractor to create a plan to make up for the lost time. Furthermore, the results of tolerance were viewed as largely positive since they helped to make Kilungule "A"'s urban form resilient or adaptable in the short term. However, if they are allowed to continue unchecked, they will contribute to the chaos of this area. Without direction, incremental construction could result in undesirable circumstances like disorder and noise, driving people away and failing to create inclusive and flexible urban forms. Additionally, TZS 531 million, or USD 230,000, was spent by the government on formalisation, namely the identification, mapping, and issuance of a Certificate of Right of Occupancy for the 6,000 plots. However, because there was less assurance of security for their land parcels, the majority of landowners ultimately failed to pay for their Certificates of Rights of Occupancy. Out of the thirty landowners interviewed, only four were able to obtain them. By September 2017, more

⁶⁸ Mr. Mpogolo interviewed in the year 2022

⁶⁹ Ms. Soso - Social development’s officer at Temeke municipality DMDP section interviewed in the year 2024

than 20 months later, only 88 people had received the CROs, according to Omar (2017). There are conflicting opinions about whether the Tshs 7,777,000,000, or USD 3,059,860.66, allocated to the physical regularization exercise especially, the widening, enhancing, and tarmacking of the *Maji Chumvi*-Kilungule road exercise was effective in making Kilungule "A" urban space inclusive and adaptable, while acknowledging its contribution to enhancing connectivity and integrating this urban space into the greater city fabric. Increased informal activities can be viewed as efficient in the informal urban ordering system because they provide a wide range of income groups with access to urban goods and services, which significantly contribute to the growth and improved urban form, even though they may be deemed inefficient in the formal urban ordering domain. Furthermore, the landowners who received compensation did not remove or demolish the obstacles along the roads, making them impassable, so the physical regularisation used to widen the interior circulation paths was viewed as inefficient. Therefore, it was determined that the government's adaptation strategies are reasonably effective because they encourage informal actors to embrace specific formal values, mobilise formal and informal resources to balance alternative urban space production, and enable equitable access to urban goods and services that should be commensurate with the amount of resources invested.

6.3.11 Systems' effectiveness

The system of adaptation was seen as partially effective. For example, during physical regularisation in Mamboleo "B", it was observed in the DMDP project reports that the specifications, design, and drawings of the detention ponds did not adequately address the green aspects, among other objectives, for the constructed infrastructure in DMDP projects was to enhance amenities of the city. The project design did not fully account for the amenity potentials associated with the proposed detention ponds. In addition to flood control, the ponds were supposed to serve multiple purposes, including recreation, aesthetics, nourishing urban ecosystems, and altering the urban microclimate. Task B of the consultancy's terms of reference describes the role of consultants in design reviews on all four projects, and feasibility studies and preliminary design were not completed to a high standard. In addition to conducting design reviews, the consultants were expected to examine detailed engineering design reports, including maps, drawings, and design reports; confirm the accuracy of on-site survey data and any prior research; update the detailed engineering design of the various bid packages; and offer an overview and recommendations. Additionally, it was observed that while the consultant completed the design review in all DMDP-implementing municipalities on time, the feasibility studies and preliminary designs were not sufficiently reviewed. As a result, the contractors

authorised designs with insufficient details for implementation, which ultimately led to project execution delays. Additionally, the project correspondences, however, revealed that the consulting engineer for DMDP in Kinondoni was not promptly provided with a final copy of the drainage works preliminary design. This was in line with the information presented at technical meeting No. 1 of February 19, 2019. It was also observed that design details were implemented during construction in nearly all drainage sub-projects. Additionally, the contractor brought up the majority of the design improvement requirements, suggesting that there were insufficient field studies and design reviews to pinpoint areas that needed prompt client attention. While construction was going on, the circumstances led to the redesign of some project components, which changed the drawings and BOQ and caused the project to go over schedule.

One could argue that the methods used to modify the informal spatial dynamics in Kilungule "A" were not totally successful in reaching the universal objective of creating inclusive and adaptive urban settlements. Unguided variations in plot sizes, the consolidation and persistence of unintended very high-density zones, difficulties for vehicles to access the inner parts of this area, the existence of unguided building use-changes, a mixture of building functions, and the informal constructions that were piling up again on new road reserves are all examples of the spatial disorder that has been brought about by the government's approach of intervention with minimal disruption to the informal spatial organizing system in Kilungule "A.". These indicators show the difficulties brought about by the government's decision to permit unofficial activities to persist while making gradual attempts to impose formal spatial organizing mechanisms. It was believed that formalisation, which only occurred in Kilungule "A," was insufficient to increase tenure security, which would have allowed the impoverished to live in cities and create inclusive urban forms. Twenty-six (26) of the thirty (30) home owners interviewed in Kilungule "A" have not paid for their government-issued Certificates of Right of Occupancy. The possibility of making this area inclusive is jeopardised because residents, especially those residing in prohibited areas, are at risk of being evicted.

The physical regularisation that occurred in Kilungule "A" and Mamboleo "B" was successful in enhancing these areas' integration and connectivity with the wider city fabric. Still, it was unsuccessful in improving the accessibility and permeability of the entire settlements. Since the strategy used to achieve a relatively urban form orderliness involves gradually combining formal and informal space production mechanisms, the continued existence of informal

activities and spatial organising techniques may not be seen as a complete failure of the government intervention effort. By taking this approach, residents are less restricted by formal planning requirements to engage in spatial development activities that are appropriate for their socio-economic circumstances. Building on this context, it became clear that the government's adaptation strategies for embracing informal spatial dynamics are practical and reasonably effective, even though their outcomes fall short of the desired outcomes. The promising incremental nature of the formal-informal spatial production mechanism, which is dependent on how long it takes for the government and informal actors to adjust and produce an improved urban form, was also mentioned as a potential indicator of effectiveness.

6.4 Summary

This chapter highlights the drivers and impacts of adapting informal spatial dynamics in Mamboleo "B" and Kilungule "A." These include economic constraints that hinder the regularisation of informal settlements, challenges posed by urban sprawl, and the critical need to address housing shortages. The government has also recognised the risks of social division and conflicts over plot boundaries, prompting efforts to enhance social cohesion through tenure security and boundary demarcation. Global policy commitments, such as the Millennium Development Goals and the New Urban Agenda, have further pressured Tanzania to adopt inclusive urban practices. These policies emphasise the creation of compact, sustainable urban environments that integrate diverse socio-economic groups, particularly the urban poor.

The systems of adaptation analysed in the chapter consist of two main approaches: toleration and regularisation. Toleration involves allowing informal activities such as unregulated construction and land acquisition to continue without interference, while regularisation focuses on integrating informal spaces into the formal urban framework. This is achieved through tenure formalisation, infrastructure upgrades, and spatial reorganisation. Toleration has led to irregular plot configurations, mixed-use developments, and shared spaces. Meanwhile, regularisation efforts, such as tenure formalisation and infrastructure upgrades, have improved connectivity and integration with the broader urban fabric. The government's efforts to balance inclusivity and sustainability through toleration and regularisation have yielded mixed results, with incremental progress being made. Despite these gains, inefficiencies persist, including delays in projects like the Dar es Salaam Metropolitan Development Project. Informal activities often re-emerge in regularised areas, revealing systemic challenges in achieving lasting change.

PART THREE**DISCUSSION OF FINDINGS, RECOMMENDATIONS AND CONCLUSIONS**

This part wraps up the thesis. It comprises Chapters Seven and Eight. Chapter Seven presents a cross-case analysis of the empirical findings from Part II. The analysis leads to the conceptualisation of the values necessary for the adaptation of informal spatial dynamics and for the efficiency and effectiveness of the systems used in the production of space and in the adaptation of informal spatial dynamics. The main conclusions of the thesis, as well as suggestions for successful ways to adapt to informal spatial dynamics, are presented in Chapter Eight.

CHAPTER SEVEN

7 DISCUSSION OF FINDINGS

7.1 Introduction

The preceding chapters four, five, and six presented the findings of this study. This chapter discusses issues emerging from the research and synthesises the main findings from Mamboleo “B” and Kilungule “A”. The cross-case analysis was used to compare case-specific idiosyncrasies (the processes of land acquisition and organisation of space together with various factors that influence the actors’ decision during the carrying out of their activities in Kilungule “A” and Mamboleo “B” settlements), convert them into generalizable observations, and link them with existing theories, and discuss the findings. Within - case analysis was also used to discuss the findings on the adaptation of informal spatial dynamics in Kilungule “A”. For consistency, the major themes used to analyse the processes of land acquisition and organisation of space in Kilungule “A” and Mamboleo “B” are maintained in this chapter. The concerns were, to highlight the emergence characteristics of Mamboleo “B” and Kilungule “A” settlements, the complexity of the system producing spaces, its values and drawbacks, the values governing spatial changes in informal settlements, dwellers’ socio-economic realities as true drivers of spatial change, socio-economic resilience of resulting urban forms, the adaptation system’s success or failure, tangibility of the government’s reasons to adapt the informal spatial dynamics, reflection on theories and methodology and the summary as follows;

7.2 Emergence characteristics of Mamboleo “B” and Kilungule “A” settlements

The findings indicated that, Kilungule “A” and Mamboleo “B” settlements were not originally envisioned or created intentionally as settlements by anyone. They evolved from unorganised informal and formal processes. They show the emergence behaviour inherent in complex systems that are discussed by scholars like Jerab (2025) and Sengupta (2019). Kilungule “A” showcases the adaptability and community-driven nature. Its roots in agriculture allowed for a flexible approach to land use, where individual landowners gradually subdivided large farming parcels into residential plots to meet people’s needs. This process, exemplified by Mr. Puluku’s efforts in subdividing inherited land for new settlers, highlights how informal settlements can foster strong community bonds and ensure affordability, particularly for low-income groups. As the area transitioned from agricultural to residential within city boundaries, the community’s adaptability facilitated organic growth and integration, creating a vibrant and cohesive

settlement. In contrast, the location and survival of Mamboleo “B” close to TAZARA railway, illustrates the Tanzania’s government intentional initiatives (political decisions) to create the settlement. The government’s 1970s *“Operation for Establishment of Corporate Villages”* catalysed settlement near the railway, promoting an organised urban expansion. However, Mamboleo “B” also experienced organic, unplanned growth, resulting in a dynamic, mixed-use community. This blend of formal decisions and informal development highlights the limitations of rigid urban planning systems that rely solely on pre-conceived plans. While formal plans provide structure and strategic development, informal processes’ inherent flexibility and responsiveness allow for more adaptive and resilient urban spaces.

Further, both settlements underscore the benefits of integrating formal and informal processes. In Kilungule “A,” the large parcels accommodating housing and farming illustrate a hybrid land use that maximises utility and sustains livelihoods. In Mamboleo “B,” the strategic location near TAZARA railway facilitated economic opportunities and accessibility, while the organic growth fostered a diverse and vibrant community. The comparative analysis of these settlements underscores the advantages of praising dynamic formal-informal processes over a rigid formal urban planning system. The adaptability, community engagement, and responsiveness of informal processes create more inclusive and resilient urban spaces that can evolve with changing needs and contexts. Conversely, a strictly formal approach may stifle such adaptability, leading to less responsive and more exclusionary urban environments. Therefore, integrating the strengths of both formal and informal processes can lead to more holistic and sustainable urban development, accommodating diverse needs and fostering community resilience.

7.3 The Complexity of the System Producing Spaces, its Values and Weaknesses

Kilungule “A” and Mamboleo “B” showcase how space production can succeed through dynamic processes that prioritise community needs and economic pragmatism, providing significant life support to urban dwellers, particularly people experiencing poverty. The flexible approach allows individuals to adjust their dwellings and spaces according to their available resources, making informal settlements a more accessible option for many. In contrast to formal urban planning, which imposes stringent regulations and high costs that are frequently unaffordable for low-income populations, these self-organized activities are carried out with less external control, adding to the complexity of the system of space production in informal settlements though they may contribute to making the processes and spaces prone to corruption

in future. The findings revealed that, the elements, namely, the actors, community, tools, motives, division of labour, and rules involved, make up the system of space production in informal settlements. The elements were seen changing with the changing needs, preferences, interests and situations facing or surrounding the space developers – making it impossible to predict the outcome of these elements – a situation that adds more complexity in the processes and the resulting spaces. For example, the findings indicated in both places that, the actors and other stakeholders (community) of varying calibre were involved and making decisions based on their individual or collective interests, needs, and preferences. However, the involvement of actors of varying skills was contributing to among others, making the system complex but also open to unwanted actors such as the unskilled and unethical local masons who eventually produce low quality dwellings and spaces even for their affluent customers. The system was further seen open to actors who are less concerned with community interests, such as leaving space for public infrastructure and services – a situation that has resulted to settlements inaccessible by cars like some parts of Mamboleo “B” and Kilungule “A”.

The findings also revealed informal space developers using various primary, secondary, and tertiary tools to produce space. The tools involved building materials like tires and dilapidated roofing sheets that were used to construct fencing walls in Mamboleo “B” and Kilungule “A”. Others were seen selling their land parcels informally in piecemeal fashion, building without seeking formal approvals specifically the building permits, or involving formal experts, like the registered architects and planners. This freedom contributes to widening the range of space-production tools developers could afford – a factor that contribute to enabling the dwellers of these places surviving in urban areas including cities. Further, the flexible land sizes and development conditions seen in both places allow people from different social, economic and cultural backgrounds to build homes that meet their needs. However, scholars like Raman & Roy 2019 and NUSP 2015 caution that, if the processes of production of space continue to be unguided, they are likely to produce chaotic settlements in future.

Further, the varying motives behind the activities of space production were also evident, adding to the complexity of these settlements while also making them prone to corruption. For example, the residents were able to sell their land parcels and use their premises for rental business purposes, such as renting rooms for profit or during economic crisis. These informal economies were seen as crucial to the livelihoods of these settlements. 15% of the people of Mamboleo “B” were seen working in the informal sector, selling food to earn a daily income

and provide a livelihood, while around 85% of the people of Kilungule 'A', particularly in the Indigenous zone, were working in small businesses. Being located within living areas, these activities also contributed to among others, reducing travel time and costs hence increasing dwellers' economic efficiency. The convenient, unrestricted building use changes and the easy transferability of ownership in the analysed informal settlements, contribute to enhancing the survival of the informal dwellers in urban areas. However, unguided mixed use and informal alterations of buildings have always been criticised by some experts, such as Raman & Roy 2019 and NUSP 2015, as leading to slums and incompatible building features, a situation which has started to emerge in these areas, where some religious buildings generate considerable noise and cause acoustic discomfort to residents.

Regarding the division of labour, the results indicated that, anyone could assume any duty in production of space so long he/she is capable of performing it. For example, land brokers could engage in resolving the plot boundary-related conflicts or even produce building plans for clients in need. Unorganised mediators, such as brokers, were seen as necessary for simplifying the process of land seeking. Still, these individuals have no fixed physical location, such as an office, where land seekers can easily find them. They also lack a governing unit for their practices – a situation that opens the door to malpractice, as exemplified by the emergence of corrupt brokers who harm their clients.

The rules, such as the piecemeal land parceling, sharing of space use, a room for variation, and the incrementalism in construction, that were involved in producing the informal spaces, contribute to making the systems of production of space complex though they have begun showing some signs of making these areas spatially chaotic in future, concurring with some scholars like Boeing (2018), Rauws (2017), and NUSP (2015) who cautioned that, if left unguided, the complex systems of urban forms production may result to chaotic settlements in future. The piecemeal fashion of land subdivisions and disposal exemplified by Mr. Mzuzuri in Mamboleo "B", who subdivided a large plot from 4046.86 m² to 758.00 m², and by Mr. Mgaluka in Kilungule "A" allow for adaptive land-use changes, enabling affordable housing solutions for many. However, despite their advantages to land sellers, the piecemeal subdivisions and disposals were seen to result, among other things, in settlements characterised by narrow circulation paths, making them inaccessible by car. The informal negotiations and agreements were seen as adding flexibility in adjusting spaces, such as shifting plot boundaries, as in the case of Baba Happy and his neighbour in Mamboleo "B", they need some external agent or

overseer, such as sub-ward government officials, to bind them.

Further, the room for variation, innovation and creativity offers developers the opportunity to engage any actors, tools and rules, and to divide labour among the actors and stakeholders in whatever way they afford. The room for variation was seen to encourage creativity, as was exemplified in both areas, concurring Cozzolino (2020) and Sharifi et al. (2018), who noted that, a room for creativity and innovation contributes to making urban forms adaptive or socio-economic resilient. For instance, in both Mamboleo “B” and Kilungule “A,” the residents were able to exercise their creativity and create infrastructure such as outdoor seating, worktops, circulation paths, and even ordered layouts with accessible plots that fit their contexts and cultures. In Kilungule “A,” for instance, Mr. Mgaluka and Mrs. Komba introduced the ordered layouts that are marketable, accessible by cars, and have service infrastructure. The room for creativity, has among others, made the innovative structures acceptable in the society contrary to some top – down initiatives which incur much cost to make the dwellers accept, as was noted by Kironde (2019) in Tanzania where the poor involvement of dwellers resulted to rejection of newly proposed settlement layout that the government suggested in a particular area of Dar es Salaam. However, though a room for variation is offered, some form of governance is required to avoid chaotic settlements and space production systems concurring with other scholars like Yoo et al. (2017) who noted that combining a grid system with an organic form enhances the significance of the organic form itself, but still insists on seeking a balance as a crucial exercise to prevent the resulting combination from becoming chaotic.

7.4 The Values Governing Spatial Changes in Informal Settlements

The findings from both Kilungule “A” and Mamboleo “B”, indicated that, the systems involved in production of space are anchored on the values of piecemeal land parceling, de facto transfers of land rights, sharing of space use, negotiations of transactions, variations, timelessness, incrementalism, spontaneity, adaptiveness, and freedom from formal controls, and unrestricted use of spaces. These values contribute to making the systems of space production dynamic, complex, and supportive of dwellers’ daily socio-economic struggles. The values here are those that support the dwellers’ survival in urban areas and support their daily socio-economic struggles, contrary to some values observed by some scholars that advocate for crisis perception of informality and their associated spaces as stated by Ananya (2005) where the informal activities of production of space together with the resulting spaces bare the qualities of being ungovernable, illegal, dangerous, filthy, and disorderly. The values noted in this study inform

the creation of a system of space production that may enable the majority of urban dwellers who cannot afford the formal traditions to survive and thrive in urban areas.

7.5 Dwellers' Socio-Economic Realities as True Drivers of Spatial Change

The findings from Kilungule “A” and Mamboleo “B” settlements reveal that economic, social, political, situational, spatiotemporal, and contextual factors significantly impact land acquisition and spatial Organisation activities in both places. The factors in this study differ somewhat from those by other scholars like McCartney & Krishnamurthy (2018) and Limbumba (2016). For example, this study examines the factors that contribute to making these areas socio-economically resilient. Many scholars have focused on the factors that contribute to the emergence and growth of informal settlements except scholars like McCartney & Krishnamurthy (2018), Limbumba (2016), and Ahmed, (2020) who explored the factors that influence spatial changes and residential urban location choices, but without focusing much on understanding how these factors contribute to the complexity and socio-economic resilience of the resulting urban forms.

Further, this study also noted the power of the time component in exploring the factors that influence the informal production and governance of dynamic spaces, such as those found in informal settlements. The analysis of contradictions and tensions in this study have added much value to the study of factors influencing the informal production of space. The contradictions indicate that; the observed factors are not permanent as the whole system of space production in these areas is subject to changes. The factors keep changing over time in response to different emerging situations. The factors observed today, may no longer be viable tomorrow. For example, regarding economic factors, one contradiction indicated that people in these areas used to choose them because of their low purchasing power. In that regard, land was affordable for the majority of land seekers who came to this place. Nowadays, even the affluent are increasingly flocking to these areas without regard for their suitability – a trend that has driven land values higher, making them no longer affordable for the majority, particularly the urban poor. The physical observations indicated the presence of high-quality, luxurious buildings, specifically in Kilungule “A” – a situation that shows the affluent are also increasingly flocking to this formalised informal settlement. The formalisation encouraged some individuals to invest more in improving their dwellings, suggesting that other factors, rather than economic reasons, influenced the whole process of informal space production. Another example is social factors, specifically the concern for social connectivity and a desire to stay close to people they know.

This was among the factors that governed the urban location choices in both places Kilungule “A” and Mamboleo “B”. The land seekers’ decisions were influenced by social issues such as the need to stay close to relatives and friends, the avoidance of landlords’ embarrassment, and the availability of people along circulation corridors. In this regard, the land seekers’ criteria for suitability of a place are defined by these social and security aspects rather than others, such as the availability of formal land titles, the orderliness of the environment, and the like. However, as time goes on, these areas are witnessing the emergence of land and property brokers, who bring in dwellers of varying calibres, such as tribes and economic statuses, so long as they have money to pay them for land, rent, or the peace of land in need. The time aspect reminds scholars that the factors we explore are also dynamic. They keep on changing with emerging situations. Instead of ending – up exploring the factors governing spatial changes or affecting developers’ decisions towards their shaping of spaces, there is a need of going further to put into light the emerging contradiction in carrying the activities – concurring with scholars like Stetsenko (2020) and Luckan, Y. (2023) who emphasize on the importance of considering the temporal dynamics or the time component when exploring and analyzing the processes of space production among other areas of studies.

7.6 Socio–Economic Resilience of Resulting Urban Forms

The adaptation of informal spatial dynamics was observed to have specific effects on urban form, including the induction of rigidity in plot boundaries, the formation of temporarily socio–economic resilient urban forms, and the re-infiltration of informal activities in regularised spaces. The following are some examples of how the impacts on urban forms reflected the development of particular types of spaces:

7.6.1 “Invisible” Plot Boundaries and Spaces

The “*Invisible*” plot boundaries and spaces resulted from the toleration of informal production processes, as was the case at Baba Happy's home in Mamboleo "B," and contributed to making these areas socio–economically resilient. The residents of these areas were able to change the locations of plot boundaries and regulate the permeability of their fenced and unfenced living compounds through negotiations over plot boundary locations. Although Bulamile (2018) and other researchers contend that fences reduce social interaction, this study found instances in which fences served only as visual barriers rather than physical ones.

7.6.2 “Negotiated and Shared” Spaces

The “*Negotiated and shared*” spaces were a product of the invisible rules, which also contributed to the socio-economic resilience of these settlements. For example, one of the invisible rules was the one requiring dwelling owners to think twice before deciding to restrict public use of their spaces through fencing or otherwise. Dwelling owners were being reminded by the saying “*The house is yours, but it is nothing without our communal life support*”. The rule is not written anywhere but in the minds of dwelling owners and users of space themselves. This rule has been helping to remind people that social cohesiveness and connectivity are essential for their survival in cities. Under this rule, in Mamboleo “B”, people were discouraged from erecting fences around their dwelling compounds, fearing being left alone in times of difficulty. Mamboleo “B” and the indigenous Kilungule “A” zone became dominated by unfenced dwelling compounds except in the Foreigners zone where many of the observed dwelling compounds are fenced with solid walls decreasing their visual and/or physical permeability, the level of natural surveillance and probably the social cohesion of their dwellers, corroborating Jacobs (1961) who observed the contribution of fencing element in discouraging social cohesion. Further, the findings also showed the existence of fenced dwelling compounds whose owners did not restrict access. For instance, in Mamboleo “B,” the owners of three fenced-in residential complexes were observed allowing people to move between them and other locations within or outside the neighbourhoods. Some owners even allowed dances and other cultural events to be held in these fenced areas. As a result, Mamboleo “B” experiences less social interaction loss as a result of fencing than Kilungule “A,” where wealthy “foreigners” zone residents restrict entirely public access to their fenced areas. However, the situation appears contradictory, as while fencing is thought to improve security, it also jeopardises social cohesion and connectivity, both of which are essential to natural surveillance. Perhaps the type of fencing required to achieve both security and natural surveillance in the area should be considered.

The invisible rules also contributed to the equitable sharing of space among the dwellers, thereby giving rise to shared spaces. The landowners were hesitant to restrict people from using their unbuilt spaces for public activities, fearing being left alone during times of difficulty. These shared spaces are currently serving as open areas, though temporarily, as they may cease to exist when the owner becomes fearless of the invisible rules and decides to develop them by fencing or building a permanent structure. These spaces were seen being used for cultural activities, mainly cultural dances, and for other activities like playing on regular days, and even

for accommodating people during other crises like flood calamities, as per the owners' and community's decisions. The availability of these shared spaces provides them with a certain degree of freedom to accommodate new needs as they emerge, thereby enhancing the redundancy quality of these settlements and, eventually, their socio-economic resilience. Regarding the purpose, they serve in these communities, the shared spaces have contributed to inducing and enhancing the Redundancy qualities in these settlements, which in turn heighten the socio-economic resilience of these areas. However, since no one controls, guides, or determines their Sizes, geometrical properties, spatial distribution, connectivity, and accessibility, their performance becomes uncertain, as a balance among these aspects is needed. For example, according to Sharifi (2018), the excessive presence of open spaces conflicts with compact urban development and can lead to urban sprawl.

7.6.3 “Adaptive Spaces”

The results also indicated the formation of spaces that are continuously evolving, adapting to changing social, economic, and political factors. This adaptation accommodates both tacit and formal knowledge, fostering creativity and innovation in both settlements. Developers actively devise solutions that address environmental challenges while simultaneously enhancing social interaction and productivity within these communities. The dwellers' creativity and innovations in adaptive spaces have significantly improved their adaptive capacity, reinforcing Cozzolino's (2020) argument that adaptive settlements offer space developers opportunities to modify their environments in response to emerging needs and circumstances. Further, the innovation of creating ordered layouts using informal processes has brought the ordered layout into the unordered (informal) ones. This process of integrating ordered layouts within unordered ones is often described as combining a grid system with organic forms—a practice encouraged in areas with existing grid layouts, as it enhances the spatial significance of organic forms. However, some scholars, such as Yoo et al. (2017), emphasise the importance of maintaining a balance between ordered and unordered layouts to prevent future spatial chaos. Additionally, scholars like Habraken (1998) and McCartney (2018) have associated layout configurations to crime. In contrast, the spatial patterns observed in these areas do not appear to be associated with crime but rather with individual choices, market forces, and the socio-economic circumstances of both land sellers and buyers. This somehow aligns with Pojani (2019), who argues that, ordered layouts often emerge from organised land invasions led by community leaders or informal developers.

7.6.4 “Transformative Plots” and Piecemeal Densifying Spaces

The results indicate that the emergence of dynamic land parcels that continue to fragment in response to the demands of buyers and sellers is due to the government's tolerance for the informal production of space. This was exemplified in Mamboleo B," where Mr. Mzuzuri reduced his land from 4,047 m² to 758 m² over several decades. These ongoing plot subdivisions contribute to increasing the number of smaller lots, enhancement of the settlements' piecemeal densification, permeability and modularity levels, and, hence, their physical resilience. The increased plot subdivisions were also fueled with the convenience of land access and the transfer of land rights attracted many to these places, leading to the rapid densification of these settlements. The cumulative densification, is an example of the settlement's emerging behaviour that increases its complexity and, consequently, its socio-economic resilience. Further, the gradual densification through piecemeal subdivisions has been observed by scholars such as Bawole et al. (2020) and Abebe (2016), who noted that land is divided, sold, and leased at low prices, thereby contributing to the growth of settlement density.

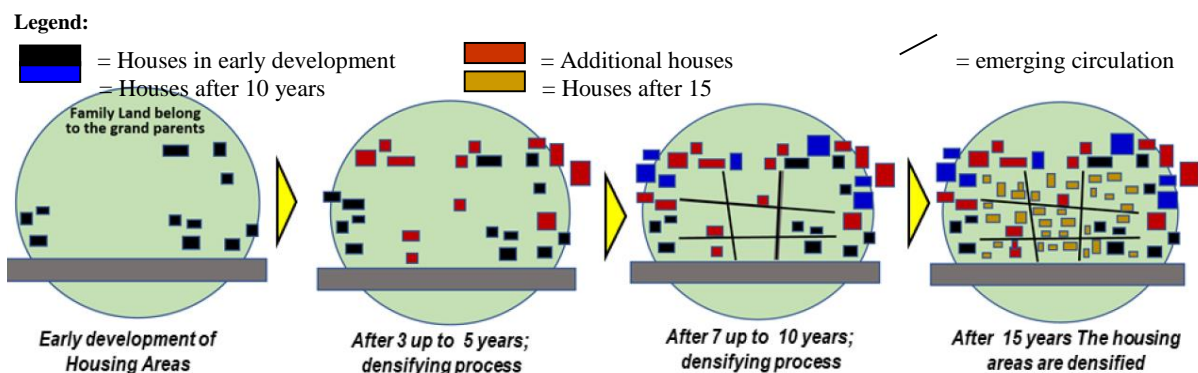


Figure 7.1. Densification of an informal urban space through land subdivision
Source: Paulus Bawole et al., 2015

However, scholars like Alawneh (2022) also caution that the existence of smaller plots alone reduces diversity. The smaller plots must be combined with the large lots needed to accommodate investors who need more space to run their businesses. The combination of small and larger plots was observed mainly in Foreigners zone of Kilungule "A," which has mostly larger plots within fenced dwelling compounds as compared to the Indigenous zone of Kilungule "A" and the entire Mamboleo "B" settlement which accommodate mainly small plots. The combination of smaller and larger plots increases functional diversity of the settlement. The larger plots accommodate buildings with other functions other than residential. The functions can be such as community buildings like churches, social halls and even the small scale industries. The presence of commercial activities in these areas and hence the proximity

of employment to housing is one of the promoted features of inclusive cities. The closeness of jobs and housing has strengthened the local economy and lessened the effects of possible economic downturns, increasing the settlements' diversity and variety and ultimately enhancing their financial resilience.

Further, the incremental mode of dwelling construction has increased the adaptability of housing units and the spaces that accompany them, encouraging the innovative use of resources and technologies and ultimately increasing their socio-economic resilience, as according to Salat (2017), a system must be developed gradually, bottom-up, from smaller scales to be resilient. Additionally, this phased construction gives developers the flexibility to build homes at their own pace, within their own abilities, and according to their needs. As resources allow, developers elevate the status of their homes, reflecting the flexibility of land use laws. Homeowners construct over time, often without architectural drawings, using forms, materials, construction methods, and styles that suit their financial constraints. Therefore, the implementation of incremental housing enables the community to create affordable, livable, and healthy housing for low-income households while also giving them the flexibility to build homes tailored to their needs, pace, and capabilities. Additionally, user-determined building standards and materials promote creativity among developers and enable users to modify their homes to meet changing needs, thereby reducing the economic, social, environmental, and physical shocks necessary for survival. Brick and mortar buildings, on the other hand, indicate greater investment and stability. In contrast, non-durable materials, such as aluminium sheets used in fence walls and mud, indicate a higher rate of expected transformation, corroborating McCartney and Krishnamurthy (2018).

7.6.5 *'Frustrated' Buildings and Spaces*

Urban form was thought to be unaffected directly by formalisation. However, it was seen indirectly, leading to the emergence of frustrated circulation paths and the formation of various physical images in a single settlement. Diversity of physical images emerged in those areas as a result of the urban planning authorities' tendency to declare some areas uninhabitable and require people to leave, while designating the remaining areas as habitable and granting their residents formal recognition through Certificates of Right of Occupancy (CROs). While their counterparts in "habitable zones" were investing more in housing, those in "uninhabitable" areas were discouraged from doing so. Further, Mamboleo "B"'s lack of a building permit and Kilungule "A"'s disregard for urban planning laws were observed to have led to frustrated

spatial development in both settlements. The establishment of fixed plot boundaries, which contribute to creating rigidity in these areas, was observed to be facilitated by the planting of beacons in the formalised land parcels and the official recognition of the lands. The beacons and the formal ownership of land induce difficulties in the disposing land conveniently or move plot boundaries due to addition of the bureaucratic processes and costs associated with them.

7.6.6 ‘Informalised’ Spaces

The findings also indicated that, despite their value in enhancing accessibility, permeability, and connectivity, the physical regularisation was seen as encouraging informality to return to the regularised spaces. This partial regularisation has facilitated new informal activities, with street vendors establishing kiosks along the regularised roads, corroborating Vedasto & Mrema, (2013), who noted the phenomena whereby informality begins to enter into the formal/planned areas, though, in our case, informality returns to the regularised spaces. The rise in land values, indicated by affluent individuals purchasing land from indigenous residents, further complicates the situation. In Mamboleo “B,” similar infrastructure enhancements, such as road tarmacking and river widening, have revitalised the area and encouraged property investments by residents, motivating many to upgrade their dwellings. However, informal construction persists in both settlements, underscoring the complexities of urban regularisation. The physical regularisation, such as infrastructure improvements, was seen contributing to the emergence of diverse physical images, frustrated circulation paths, and informal activities within the regularised spaces, and to significantly reduced plot sizes, impacting urban landscapes in both settlements. In Kilungule “A,” these upgrades have included widening major access roads and improving interior circulation paths to enhance connectivity.

7.7 The Adaptation System’s success or failure

The findings indicated that the systems used to adapt informal spatial dynamics involve the activities of tolerance, formalisation, and regularisation. Adaptation systems are relatively efficient & effective in producing & managing urban spaces. They adapt informal spatial dynamics with both efficiency and inefficiency. They showed some promise in achieving inclusive, socio-economically resilient urban forms, but they were also more likely to result in chaotic urban forms down the road. For instance, toleration may allow the growth of resilient, adaptive spaces and urban forms, but may eventually lead them to chaos. Formalisation enhances tenure security but draws in gentrification. Formalisation introduces standards such as minimum lot sizes & approved layouts, which in turn kill innovation & creativity, thereby

reducing urban form's adaptability. Formal approvals like the building permits kill incrementalism, hence the vibrant, evolving skylines of mixed stages. The private boundaries, setbacks, & use discourage sharing, compartmentalise space, reducing the permeability and multi-functionality that support tight-knit communities; building permits may regulate the production of informal spaces but induce rigidity in the dynamic spaces, which could result in the complete collapse of the space production system; physical regularisation improves connectivity but draws new informal activities in the regularised spaces.

Toleration of informality showed promise for resilient urban forms, but it also has the potential to lead to chaotic settlements in the future. In informal settlements, the toleration of informality allowed the informal norms and values of space production to continue influencing the quality of resulting urban forms. For instance, the flexibility to choose among different land-acquisition modes, housing designs, and space uses led to a variety of buildings with distinct purposes and distinctive street features, thereby increasing the variety of these settlements. Plot subdivisions involved actors of various skill levels who were observed producing a variety of ordered and unordered scenes. Given that the layouts' geometric diversity accommodates the diverse needs and desires of both land seekers and sellers, this mix helps make these settlements more resilient. There is greater flexibility in creating and using spaces without formal restrictions, which also promotes resilience in the urban environment. With this degree of freedom, a variety of social and economic activities can flourish in undeveloped areas, provided property owners consent. However, they might help make this settlement chaotic in the future if it stays unguided. For example, the freedom to dispose land, was seen attracting people from outside the settlement including the affluent to come and buy land in these areas exposing the areas to potential gentrification as supported by Manara (2020), who noted that, currently, Kilungule "A" is undergoing a gentrification process with affluent people continuing to buy off the indigenous, buy land or buildings from existing owners who want to leave this place. The unmanaged incremental construction in Kilungule A and Mamboleo B, for instance, may lead to compromised designs in the future, including the use of substandard materials, unsafe orientations, and adverse health effects. Further, while mixed land uses are beneficial, researchers warn that if they are not controlled or if the mixing exceeds a certain threshold, they can lead to disorderly urban settlements with undesirable features like noise, encroachment, traffic jams, and chaos, all of which have started to appear in Kilungule "A.". To further prevent chaos, a certain amount of control is required when organic and grid layout collide. It seems challenging to attain the ideal mix of small and large plots with tolerance, though, as Sharifi

(2019) asserts, to create resilient urban forms, the mixing process must be managed and regulated. Furthermore, Sharifi (2019) contends that to accommodate a wide variety of building types and make the urban form adaptable enough to allow for gradual change, the mixture should follow a power-law distribution, which consists of a large number of small lots, a medium number of mid-size lots, and a small number of large lots.

Regarding physical regularisation, although Kilungule "A"'s adaptation system enabled economic flexibility through incremental development with few inputs, there is room for improvement due to the region's severe spatial disorder, wasteful infrastructure, limited formalisation investments, and a lack of strong feedback mechanisms. On the other hand, Mamboleo "B"'s substantial investments, totaling USD 330.30 million, have revitalised the neighbourhoods by attracting new residents and promoting property improvements. Significant infrastructure investments made possible by the DMDP have enhanced urban services and living conditions, which benefit Mamboleo "B"'s adaptation system. However, the overall effectiveness is impacted by project delays and insufficient post-implementation monitoring.

The formalisation of land rights presents both benefits and challenges. On the one hand, it has helped reduce conflicts over plot boundaries and land ownership, with 13 of 30 dwelling owners in Kilungule "A" acknowledging its effectiveness. It has also strengthened the sense of land tenure security, particularly in the Foreigners' Zone of Kilungule "A," where residents have begun investing more in housing construction and improvements. However, in achieving socio-economically resilient urban forms, formalisation is starting to show signs of failure. Formalisation often disregards the socio-economic flexibility inherent in the production of space and its resulting urban forms. For instance, formal urban planning tends to overlook social flexibility, as zoning laws and rigid land-use plans restrict adjustments in response to family growth or social needs. The placement of boundary beacons and the issuance of Certificates of Right of Occupancy (CROs) reduce the fluidity of plot boundaries, eliminating traditional negotiation processes. Additionally, formal land titles have introduced rigidity in informal land transfers and discouraged piecemeal land sales, which have historically supported residents' livelihoods. As a result, the adaptive capacity of these spaces has diminished, limiting the gradual densification necessary for settlements to accommodate new uses and populations.

Further, with formal titles, land subdivision and transfer have become more restrictive, now governed by the National Land Policy of 1995, which states that landholders cannot subdivide, transfer, or mortgage their land without the Commissioner for Lands' consent. If allowed to sell,

landowners must navigate complex and bureaucratic procedures for transferring land rights, making it difficult to dispose of small portions of their land. In the developing world, such land rights remain fragile, as Djankov et al. (2022) highlight that possession is not always guaranteed and strict regulations constrain sales. These limitations can lead to the formation of large land blocks with long, impermeable street edges, reducing accessibility and connectivity within the area. This, in turn, affects the modularity of settlements, which currently supports mixed land uses. According to Sharifi (2019), permeable street edges are crucial for connecting urban modules and enhancing socio-economic resilience. At present, developers can easily purchase plots in informal areas, demolish existing structures, and construct new commercial or religious buildings, fostering land-use diversity. This mix of uses contributes to varied building types, attracting different people at different times of the day and night, ultimately strengthening socio-economic resilience. However, with CROs, this process becomes more complex, potentially limiting affluent developers' opportunities to acquire multiple plots. Furthermore, as noted by Wood and Dovey (2015), efficient and resilient urban forms typically consist of numerous small, flexible elements mixed with a few larger ones that support each other. This suggests the need for guidance on the spatial development of complex spaces to ensure the emergence of socio-economic resilient urban environments.

Landowners who have been granted CROs are currently, albeit laxly, obliged to develop their parcels of land in accordance with urban planning regulations by obtaining formal approvals such as building permits and planning consents, as outlined in section 34(2) of the Land Act No. 4 of 1999 (URT, 1999). The delicate, informal values and traditions that are rooted in the complex qualities of sharing, negotiating, building incrementally, and disposing of land piecemeal, qualities that contribute to making these areas complex, dynamic, and socio-economic resilient, are starting to be killed by the use of current conventional urban planning regulations to control spatial development in these areas. Developers are failing to comply with the formal regulations. The regulations define the actors, tools, rules, division of labour, and motives of spatial development. However, this framework conflicts with the actual situation, where these aspects vary based on developers' interests, needs, preferences, and financial capacity. For instance, the incremental approach to dwelling construction provides a flexible building process that unfolds gradually and is not bound by strict timelines, progressing as resources become available—an aspect often overlooked by formal systems.

The use of building permits to regulate informal activities reveals significant contradictions, as demonstrated by various examples and numerical data. In Kilungule “A,” bureaucratic obstacles within the municipal planning authority frustrate 65% of developers, leading some to seek informal agreements to bypass formal procedures due to affordability constraints. Similarly, in Mamboleo “B,” 45% of developers engage in informal arrangements, highlighting both the system's flexibility and its vulnerability to such practices. The ongoing challenge of balancing formal regulation with informal activities underscores the need for customised building permits that better align with the specific characteristics and needs of these urban environments. Additionally, physical regularisation has yielded positive outcomes in both Mamboleo “B” and Kilungule “A.” However, it has also introduced challenges, such as the re-infiltration of informal activities along improved road reserves, particularly on the *Maji-Chumvi*–Kilungule road in Kilungule “A.” Furthermore, rising land values have led to an increase in affluent buyers acquiring land from indigenous residents, altering the socio-economic composition of these areas.

7.8 Tangibility of the Government’s Reasons to Adapt the Informal Spatial Dynamics

The findings from both Kilungule “A” and Mamboleo “B” revealed that the government decided to adapt to informality to enhance housing Production for the majority of the urban poor and make their cities inclusive and compact. The government of Tanzania had good reasons to adopt informality; however, these reasons were supported by factors such as its financial difficulties and its desire to adhere to the international call for sustainable cities. Such reasons show the government's good intentions toward informality, but they do not reveal the inner acknowledgement of the value informality has in the production of space. The reasons seem to still revolve around the perception of informality as a problem that needs to be eliminated, rather than accepting its value and learning from it, while promoting upgrades to the spaces that result from it. The concern to learn some positive aspects of informality is supported by scholars like Silva (2018), who suggested that successful adaptation of informal spatial dynamics is the one taking place whereby the formal planning systems interact with informality and, from that interaction, learn how to improve planning rules while promoting an upgrade of informal interventions. Further, if the government could think in terms of complexity, the rationale for adapting informal spatial dynamics could be to achieve complexity in urban space production processes and spaces.

7.9 Reflection on Theories and Methodology

The theories were seen revolving around the complexity thinking perspective, which guided even the choice of theories and methodologies used in this study. For example, the unitary theory of space was chosen for its ability to accommodate dynamic, complex informal practices of space production. The Cultural–Historical Activity Theory (CHAT) was selected for its tradition of viewing and analysing space production activities as systems. The systems evaluation theory (SET) was chosen because it was the only theory capable of evaluating systems such as the system of adaptation of informal spatial dynamics in this study. Generally speaking, complexity thinking controlled every aspect, including study direction and recommendations. Nevertheless, it appeared that systems thinking was meant to develop to think and deal with the intricacy of the invisible rules and the spaces that accompany them. From this perspective, the theories used to guide evaluations of systems may go beyond mere acceptance.

The theories involved in this study were applied for various purposes. The unitary theory of space was used as a lens to understand the kind of space needed in the question. The Cultural-Historical Activity Theory (CHAT) was primarily employed to highlight key aspects of space production, including the actors, tools, rules, and division of labour, as well as the contradictions that emerge within the activity system. The Systems Evaluation Theory (SET) was used as an analytical tool to assess and understand the mechanisms underlying the adaptation of informal spatial dynamics. However, while SET is the primary theory available for system evaluation, it proved inadequate for assessing goal-free activities such as the toleration of informal space production. The absence of explicit goals in the toleration process made it difficult to evaluate its efficiency and effectiveness in adapting to informal spatial dynamics. To address this limitation, goal-free evaluation approaches were incorporated to supplement SET in assessing the success or failure of toleration as an adaptive strategy. Further, Place Theory played a minimal role in this study, primarily offering a perspective on the impacts of urban form that benefit space users. This led the research towards analysing socio-economic resilient urban forms, focusing on how developers produce and utilise spaces to meet their needs, interests, preferences, and financial capacities.

Lefebvre's unitary theory of space, the conceptual triad, the Cultural-Historical Activity Theory (CHAT), and the Place theory by Trancik were critiqued for failing to account for the complex and temporal dynamics inherent in the informal activities of space production. The adaptive

and transformative nature of the space production processes in Mamboleo “B” and Kilungule “A” posed challenges for these frameworks, making them less effective at fully capturing the dynamic processes of space production and the spaces they generate. The adaptive processes in these settlements included piecemeal land subdivisions and disposals, and the incremental and spontaneous construction of dwellings, together with spaces accommodating daily temporal uses. These limitations suggest the need for theories and practices that can sufficiently embrace the complexity and dynamics, such as integrating time-based change into space production analysis, or that can capture, among others, power dynamics, social conflicts, and emergent behaviours that influence spatial outcomes. Embracing temporal dynamics, particularly in CHAT, is a move towards the Transformative Activist Paradigm, suggested by Stetsenko (2020) and Luckan, Y. (2023).

Further, this study noted the theories underestimating the role of technology and digital infrastructures in contemporary space production. In both settlements in this study, the government of Tanzania was seen engaging the techniques of tolerating, formalising, and physically regularising the informal production of space and its associated spaces with less concern for the use of ICT, Big data technologies and the like to manage and control the adaptive and evolving processes and their associated spaces. These processes are complex, dynamic and adaptive. They are constantly changing, making it difficult for conventional approaches to manage them, since they were generally designed for static spaces. This study concurs with suggestions by other scholars that smart cities and big data increasingly influence spatial production today, and hence the models of these theories need to address technological aspects sufficiently.

7.9.1 Summary

The study examines the informal settlement dynamics of Kilungule ‘A’ and Mamboleo ‘B’, focusing on their distinct origins and development trajectories. Kilungule ‘A’ evolved organically from agricultural roots, emphasising community-driven adaptability, whereas Mamboleo ‘B’ emerged through formal planning efforts, such as the “*Operation for establishment of corporate villages*”, illustrating the interaction between formal and informal processes. Both settlements demonstrate the advantages of integrating these approaches, with Kilungule ‘A’ prioritising flexibility and social cohesion, while Mamboleo ‘B’ emphasises transparency and affordability. Informal land acquisition supports adaptive urban growth, driven by a desire for land independence in Kilungule ‘A’ and community-based land access in

Mamboleo 'B'. Incremental construction practices in both areas enable residents to build gradually, fostering resilient urban fabrics that rely on locally sourced materials for sustainability. However, tenure insecurity persists due to bureaucratic hurdles and the high costs of formal land titling, which continue to drive informal practices. Economic factors shape land acquisition and spatial organisation, with financial constraints influencing Kilungule 'A' and social networks shaping Mamboleo 'B'. Political interventions, such as "*Ujamaa*" villagisation, played a key role in Mamboleo 'B', whereas individual economic motives drive Kilungule 'A'. The study underscores the resilience and adaptability of informal urban forms, with informal systems offering flexibility to meet evolving socio-economic needs. The spatial complexity of these settlements results from diverse physical and social elements, reflected in their irregular layouts with winding streets. However, some areas in Kilungule 'A' show more regular patterns, which some scholars associate with infrastructure challenges.

CHAPTER EIGHT

8 CONCLUSION AND RECOMMENDATIONS

8.1 Conclusion

This research is intended to analyse the informal production processes of dwelling spaces to capture the inherent dynamics that govern the rationality of these processes and the urban forms that emerge when the government adopts them. The study was conducted in two urban residential neighbourhoods in Dar es Salaam city. The research focused on determining how people acquire land and organise space in informal settlements, examining the various factors that govern spatial change in informal settlements, investigating the impacts of adapting informal spatial dynamics on urban form, and discussing the rationale for governments' adaptation of informal spatial dynamics. Consistent with the research objectives, the essential results of the key research questions for this study came out as follows:

Firstly, regarding *how people acquire land and organise spaces in informal settlements*, it was confirmed in this study that the process of production of space comprises various informal activities such as making decisions on urban location, access to information on land markets, negotiations of land transactions, plot demarcation, and transfer of land rights. The activities are governed by various dynamic structures characterised by talks, sharing, variation, freedom of practice and space utilisation. The findings indicate that dynamic structures contributed to the emergence of complex processes and spaces that supported the socio-economic realities of the dwellers of the informal areas. Decisions on urban location were observed to have greater power in determining the locations of informal settlements, plot sizes, and the production of shared spaces in informal areas. Access to information on land markets revealed the power of social connectivity in creating shared spaces, such as those used for cultural activities. The shared spaces were observed to provide life support for their dwellers by bringing them together to address challenges collectively. Negotiations of land transactions were observed to produce spaces that adapt to changing socio-economic realities facing their communities. The engagement of players of varying calibres in plot subdivision led to plots of varying shapes and sizes, allowing buildings of varying styles, functions, materials, heights, setbacks, and even people of varying economic statuses. The plot subdivision exercise demonstrated how an informal urban space consolidates, becomes more compact, and densifies. Further, the informal land rights transfers offer room to decide on investments in dwelling construction or improvements. They also support the survival of spontaneous and incremental constructions.

So, generally, dynamic characteristics such as negotiations, sharing, variation, incrementalism, spontaneity, and adaptability result in complex urban spaces characterised by the diversity of spatial and non-spatial aspects. Complex urban spaces are of great value in urban design, as they provide dwellers with varying socio-economic realities with space to survive in urban areas. Furthermore, it was concluded that the activities of acquisition, control of access, transformation, service installation, and plot shaping are key to the informal making of a socio-economically resilient urban form in both Kilungule “A” and Mamboleo “B”. The study of Mamboleo “B” showed that the activities of acquisition, control of access, transformation, service installation, and plot shaping are key to the informal making of socio-economic resilience in an urban form. The variety of informal activities among different actors enabled them to pursue diverse avenues to address differing economic and other socio-economic challenges relevant to a resilient urban form. In this way, the bottom-up approach becomes the adopted option for shaping urban space in socio-spatial systems. The informal making of resilient urban forms was characterised by the perceived freedom of actors to take the necessary action to control, shape, use, develop, and transform the land parcel. Informal rules and norms guided land rights, space-sharing, negotiations in shaping urban spaces, and incremental urban development. Formal attempts by the responsible authorities to guide development were seen to lack the capacity to deal with the informal process of producing space and failed to exploit the dynamics of the informal system, turning the perceived informal uncertainties into a relatively positive course of action. This anomaly is attributed to the failure to grasp the lessons from actors, activities, rules, tools, and the division of labour applied throughout the informal process of making the socio-economically resilient urban form. Socio-economically resilient urban forms are highly valuable in urban design because they support dwellers' socio-economic conditions. Thus, it is unwise to leave informal activities in the production of space unguided, since settlements may be disrupted and eventually become chaotic. The informal attributes identified in this study can be utilised to inform and strengthen the formal prescriptions, providing a degree of harmony and necessary order and, hence, achieving an enhanced, resilient urban form. While this study has primarily focused on the informal system for producing resilient urban forms, it may offer relevant lessons to complement the formal rules, regulations, and standards for creating formal socio-economic resilient urban forms. Thus, the study's results may inform the formal traditions of urban production and management.

Secondly, regarding the factors driving spatial changes in informal settlements, it has been observed that people practice informality for various reasons and in response to the situations

they face. The findings from both case sites have shown that changing socio-economic conditions of the dwellers, such as economic statuses and family sizes, had a significant influence on the decisions in performing the activities of production of space, particularly the choice of a place to stay together with the amount and type of investments they put in the construction of their dwellings.

Thirdly, regarding *how the adaptation of informal spatial dynamics affects urban forms*, this study found that the government adapts to these dynamics by tolerating informal activities of space production and regularising informal settlements. Such adaptation attempts have contributed to the persistence of the informal norms and practices of space production, the emergence of plots of varying shapes and sizes, the formation of privatised settlement layout configurations, the emergence of frustrated circulation paths, and the re-infiltration of improved spaces with new informal activities. Furthermore, the system of adaptation of informal spatial dynamics in Kilungule “A” was seen as relatively efficient and effective in achieving inclusive, adaptable urban forms. Building on this background, this study observes that the government is still experimenting with the formal-informal space production approach, with bright prospects for successful adaptation. Such approaches still indicate a shift from viewing informality as a problem to be eliminated to the view that the formal and informal spatial development values can be utilised effectively to achieve viable urban forms that respond to the socio-economic conditions of the community. This study observes that the government's approaches to adapting to informality may lead to successful adaptation as both the government and the community build stronger capacities for collaboration and association.

Lastly, regarding *why governments adopt informal spatial dynamics*, this study found that the government's goals in doing so are conflicting. For example, the government formalised informally built spaces to trigger gentrification rather than develop their adaptive capacity. As a result, this approach will lead to the silent eradication of informally built spaces in the city, thereby prompting the establishment of new informal settlements elsewhere. In that regard, attempts to relax formal procedures, formalise informally built spaces, design regulations to integrate informality without changing their face, and even allow informality to co-exist with formality seem not to be fruitful in achieving successful adaptations. This is because the government does not primarily focus on learning from informality but rather on making the informal formal.

8.1.1 Policy Implications

Policies have much influence on the systems of production of spaces and their governance. These policies and regulations were observed by others, including Mosha (2005) to influence the architecture and hence the production of urban spaces. Since independence, the government of Tanzania has been shifting from exclusionary to more inclusive policies and strategies to address urban informality. From the 2000s onwards, the Government's policies have concentrated much on toleration and regularisation of the informal settlements, putting a lesser focus on another key aspect of adaptation, which is learning from informality, exploring the values governing the informal production of space and involving them to create new adaptive systems and policies to oversee the production and management of adaptive spaces.

The flexible and adaptive activities of space production and governance of space in Mamboleo "B" and Kilungule A" conflict with existing policies and regulations. The toleration of the informal production of space involved relaxing rules in these areas. The loose or absence of legal limitations was observed by other scholars, including Dovey (2015) to make informal spaces flexible, allowing for a continuous process of transformation by informal developers as they adapt to changing ways of life. However, they may become chaotic in the future. Further, the piecemeal subdivisions often produce plots of extremely varying shapes and sizes. This diversity reflects the reality of human life, as observed by Mosha (2005), who noted that family sizes and needs are never standard, nor are plot sizes. This diversity in plots' shapes and sizes has, among other things, enabled this settlement to accommodate buildings of varying sizes, shapes, and functions, and hence people of varying economic statuses. The variation in plot sizes in these areas conflicts with the zoning regulations stipulated in the Urban Planning (Space) Standards of 2018. For the piecemeal subdivisions to get a room to take place in Tanzania, some policies like the National Land policy 1995 will need to be changed, as the policy currently stipulates among other things that; *"The holder of that land has no right to subdivide, transfer or mortgage the same without the consent of the commissioner for lands"* (URT, 1995). Further, the piecemeal subdivisions, though enabling people to use their land parcels as economic assets and serve them in times of monetary crisis, if left unguided, may result in chaos in the future; hence, they can be taken as a lesson to improve some policies.

As part of upgrading, the government formalises land property rights in informal settlements and uses tools to control the informal production of space. With formalisations, developers are offered CROs and hence subject them to the challenges of formal controls as the Land Act no

4 of 1999, section 34(2) requires anyone who owns the CRO to, among others, *apply for a building permit under the Township (Building) Rules within six months of the grant of the right of occupancy*. Building permits are used to enforce the 2018 space standards. However, scholars, particularly in urban planning and design fields, concur that building permits are not suitable for guiding the informal processes of producing space due to the costs and bureaucratic procedures associated with them (Bahendwa, 2013; Mosha, 2005; Msuya et al., 2018; Omar, 2017). The informal systems of producing space are adaptive to change. For example, the incremental mode of space production noted in Mamboleo “B” and Kilungule “A” is highly timeless, spontaneous and adaptive to changing socio – economic realities of developers producing housing and spaces that are highly diverse in terms of housing styles, construction materials, and building heights - challenging the conventional tools like the building permits and the formal urban planning traditions which regard this diversity of spatial aspects as a symptom of disorder. Further, the demand for building permits for each subsequent incremental extension or alteration in activities was seen as placing an extra burden on new developers and transformers, corroborating Sheuya (2004), who noted the same in some parts of Dar es Salaam. The building permit requirement has always been seen as impractical. In most cases, dwelling owners in both settlements failed to comply with it, as the process takes longer and costs more, given the majority of dwellers’ economic statuses. In Mamboleo “B”, no one had ever obtained a building permit, whereas in Kilungule “A”, only one had formal approval from the sub-ward government administration.

The engagement of the formal approvals specifically the building permits to control spatial developments in informal settlements despite the tools not fitting in these areas, indicates the concern by the government of Tanzania to maintain the informal production of space – the concern which is also supported by many scholars including Raman & Roy (2019); Yoo et al (2017), and NUSP, (2015) who noted that, if left uncontrolled or unguided, the informal space production activities may end up resulting in chaotic urban forms in future. The government concern to control or guide the informal activities of space production, reflects the need for amend of some policies and regulations such as the Land Act no 4 of 1999 or devise new tools that are capable of producing and governing the adaptive processes of space production together with their associated spaces in urban areas as the adaptive spaces add to socio – economic resilience of these areas and survival of dwellers of the adaptive settlements like the informal ones.

8.2 Recommendations and Lessons

8.2.1 To The Government/ Public Sector

Professionals should recognise and acknowledge the wide variation in income levels and affordability among urban residents. They should recognise that not all city residents have access to official planning resources, such as laws, regulations, and zoning and urban planning guidelines. Also, rather than seeing informality as a problem to be eliminated, planners and policymakers can start to see it as an opportunity for building resilient spaces. They should welcome and use the opportunities offered by positive informality values and related space-based production processes. The government should recognise the role of informality in urban development and seek to strengthen links between formal and informal components to enhance the resilience of urban forms.

The study also suggests that the government consider embracing the complexity demonstrated in the informal production of spaces and using formal/informal interactions to improve regulation, while also promoting non-formal interventions. The establishment of stronger formal institutions or rules for planning, designing, and managing the built environment should interact harmoniously with the informal processes involved in the construction of urban forms. In this context, they should consider making tools available to those who can afford them and to those who cannot. These tools could combine formal and informal methods to enable developers to reach out to the stakeholders they need in accordance with their needs, interests and preferences. This allows them to maintain the quality of their processes and create a seamless environment. Potential actors could include non-formal actors such as local tradesmen, brokers and other unskilled workers. For example, they could allow local masons to produce basic designs for clients in informal settlements under relaxed formal control mechanisms. The examination of plans may be completed at the sub-ward level, and experts may be made available on an ad hoc basis. Land brokers and real estate agents could also be allowed to help resolve disputes over land boundaries and ownership. Further, the government can shift its approach to land ownership from a binary to a continuum to better protect residents' interests during the formalisation and regularisation of the settlement process.

To make urban forms more adaptable to change, planners and policymakers should adopt adaptive techniques that affect the conditions under which urban areas change, rather than specifying a particular configuration for a metropolitan area. Among the proposals is to offer a general framework for urban transformation without defining a specific future set of relations between actors, creating potential spaces for the area to respond to and benefit from a variety

of development paths. This approach will also open up development frameworks for the spontaneous and unplanned ways in which cities and neighbourhoods adapt to and co-evolve with changes at different levels of society, such as technological innovation, grassroots movements or demographic trends. In this respect, the hybrid tools to be developed by urban planners and designers must incorporate some of the positive informal rules of spatial production, typically characterised by dynamic informality, such as negotiation, sharing, variation, incrementalism, spontaneity and flexibility in the execution of spatial activities. The tools could also give landowners the flexibility to use their land as an economic asset whenever economic needs arise. In addition, the tools could facilitate the transfer of land rights, provide space for sharing utilisation of space, and support spontaneous and adaptive modes of dwelling construction, as they offer a lifeline to informal housing.

Urban planners and policymakers could also think of devising or adopting adaptive planning and design tools like the continuum land tenure systems and the Community Land Trusts (CLTs), which have greater power to protect the interests of residents against the negative impacts of formalisations and the rise in land values, such as the outright gentrifications, risks of evictions and increase in living standards. They could also allow a variety of affordable building materials, technologies, and styles for residents in such areas, rather than proposing high-quality materials and standards that the residents cannot afford. The tools could also harmoniously allow an actor to perform others' duties so long as they are capable. For example, they could enable local masons to prepare simple house plans for their clients in informal areas. Checking such plans could end at the sub-ward level, where experts could occasionally be made available. The land and property brokers could be engaged in resolving conflicts related to plot boundaries and dwelling occupations, respectively.

Urban planners and policymakers also need to adapt to the evolving aspirations for land ownership and housing in informal urban settings. They need to offer landowners the option to use their land parcels and dwelling units as economic assets, to sell land piecemeal, and to change the use of buildings to accommodate new functions that the dwelling owners wish. Urban planners and policymakers could devise a mechanism to adapt the informal spatial dynamics without jeopardising their socio-economic resilience, in collaboration with other stakeholders. For example, because most residential dwellings in these areas are simple, they could recognise and lower the qualifications required of professionals eligible to practice in such environments. Instead of using a registered architect, they could register, for example,

professionals with vocational education certificates and allow them to practice in such areas. Aspects like project registration and consultancy fees could also be lowered to offer people in such areas a chance to afford them.

8.2.2 To the Professionals in Urban Planning and Design Disciplines

Regarding informal spatial dynamics, professionals should agree that informality holds promise; therefore, they should learn from it and leverage the benefits of informal living, as well as the methods of producing space and the spaces associated with it. They should explore methods for studying and analysing informality that account for its complexity and dynamics. It is also vital for academicians to develop a framework or model for adapting informal spatial dynamics specific to the Tanzanian context to improve their inclusivity and adaptability in the architecture of the cities in Tanzania. Further, professionals and formal practitioners need to recognise that the human capital in informal areas is valuable for running industries, businesses, and other urban activities and should be supported. Scholars and professionals should try to understand and incorporate marginalised groups into formal systems of urban space production. To create resilient spaces or built environments that enable their users to maintain satisfaction by altering their physical characteristics in accordance with their changing needs, the other spatial professions, most notably architects, should make extensive use of their design and construction expertise. In collaboration with policymakers and urban planners, experts could develop a model to maximise the benefits of informality and enhance the resilience of urban forms.

8.2.3 The Policies' Applicability in Other Contexts

While this study primarily focused on the informal settlement of Mamboleo "B" and the regularised settlement of Kilungule "A" in Tanzania, it may be noted that these settlements represent urban areas where the production of dwelling spaces involves competing interactive layers of negotiation, appropriation, and consensus utilisation of spaces and where adaptation of informal spatial dynamics involves toleration and regularisations of the informal processes of space production and their associated spaces. The approach to and results of this study may also inform the formal traditions of the production and management of processes for producing space, together with their associated spaces, which are usually complex. Policies like these may be adopted in areas where the informal processes of space production are governed by dynamic structures akin to those that guide these processes in Mamboleo "B" and in countries that attempt to adapt the informal spatial dynamics using a system similar to that in Kilungule "A".

8.3 Areas for Further Research

The scope of this study, *Urban Form through Adaptation of Informal Spatial Dynamics: A Case of Kilungule "A" and Mamboleo "B" settlements in Dar es Salaam, Tanzania*, was restricted to comprehending the informal spatial dynamics, informal processes of space production, the nature and methods of adapting the informal spatial dynamics, and the effects of adaptation on the urban form of Dar es Salaam. According to the study's findings, other problems are related to this one but fall outside its purview. The following research topics could be investigated to understand better the issues this study was unable to address. To effectively create and oversee intricate urban areas, in-depth research on the spatial dynamics of space-production processes specifically, housing development and service installation will be necessary. It will also be required to research how to learn and embrace the complexities and dynamics of practice tools, such as plans, designs, and management tools, to develop a more generalised policy framework for the development of complex living spaces in nations where informal processes share many of the same characteristics as those in Tanzania. Additionally, a targeted investigation into suitable methods for modifying informal spatial dynamics in Tanzania is required, without sacrificing the resilience of informal urban spaces and enhancing their capacity for adaptation. Creating a valuable model for modifying Tanzania's informal spatial dynamics may be one way to achieve this. Regularisations using continuum models, such as the Community Land Trust (CLT) model, are known for protecting residents' interests. Research on these models has shown that they can do just that. Furthermore, to successfully create and manage socio-economically resilient urban forms, thorough research into appropriate adaptations of the structures, norms, values, and regulations involved in the informal process of creating these forms must be conducted.

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APPENDICES

APPENDIX 1: Guiding questions on adaptation of informal spatial dynamics and their impacts on urban form

1. Demographic information

- 1.1. Name of respondent (optional).....
- 1.2. Street name.....
- 1.3. Age.....
- 1.4. Sex.....
- 1.5. Occupation.....
- 1.6. Level of education.....

2. General questions

- 2.1. When did you start living in this house?
- 2.2. Where did you live before?
- 2.3. Are you the first one to live in this place?
- 2.4. When was this house constructed?
- 2.5. Who built it?

3. Questions about the context supporting informal production of space

- 3.1. What is the brief history of this place?
- 3.2. How do dwelling owners earn for their living?
- 3.3. What are the socio-economic conditions dwellers of this place?
- 3.4. What social services are available in the area?
- 3.5. What are the settlement's physical characteristics?
- 3.6. What factors dictate developers' decisions in production of space?
- 3.7. What are the conditions of existence and place attachment of dwellers of this place?

4. Questions about how people acquire land in informal settlements

- 4.1. When did you arrive at this place?
- 4.2. Where did you arrive from when coming to this place?
- 4.3. Why do people decide to reside in informal settlements?
- 4.4. What activities were involved in land acquisition at this place?
- 4.5. Who was involved in performing the land acquisition activities at this place?
- 4.6. What tools were engaged in performing the land acquisition activities?
- 4.7. What rules were engaged in performing the land acquisition activities?
- 4.8. What were the roles of the actors in performing land acquisition activities?

4.9. What were the motives of performing the land acquisition activities?

5. Questions about how people organise space in informal settlements?

5.1. What activities were performed in various stages of your plot development?

5.2. Who was involved in carrying the space organisation activities at this place?

5.3. What tools were engaged in performing the space organisation activities?

5.4. What rules were engaged in performing the space organisation activities?

5.5. How labour was distributed among the actors in space organisation activities?

5.6. What was the motive behind carrying the space organisation activities?

5.7. Questions about the factors affecting the land acquisition and organisation of space

1. What factors influenced the land acquisition activities?

2. What factors influenced the activities of space organisation?

6. Questions about the impacts of adaptation on urban form

6.1. What were the activities involved in adapting the informal spatial dynamics?

6.2. What were the outcomes of adapting the informal spatial dynamics on urban form?

7. Questions about the essence of adapting the informal spatial dynamics

7.1. What were the common goals of adapting the informal spatial dynamics?

APPENDIX 2: Guiding questions to individual dwelling owners

1. For how long have you been staying here?
2. Why people live in informal settlements? What made you to come to stay at this place?
Please describe briefly.
3. What is the common mode of land acquisition in informal settlements? What means did you use to acquire your piece of land in this area? Please describe briefly
4. Are there issues in this place which encouraged dwelling owners to improve their dwellings?
What issues have ever encouraged you to improve your dwelling (s)? Please describe briefly
5. Are there issues in this place which discourage dwelling owners to improve their dwellings?
If yes, what are they? Please select one, more than one from the list below. What issues have ever discouraged you to improve your dwelling (s)? Please describe briefly
6. What are common issues influencing plot owners' decisions on space organisation at plot level in this place? What normally influence your decisions on layout of functions at plot level? Please describe briefly with the use of a sketch of layout of uses at your plot.
7. What are common issues influencing developers' decisions on type and amount improvements to make on their dwellings in this place? What issues have often influenced your decisions on type and amount of improvements to make on your dwelling (s)? Please describe briefly changes you made on your dwellings together with reasons for the decisions (Use attached sketch of your dwelling compound)
8. Is sharing of space utilisations e.g. conductance of ceremonies a common practice in this area? If yes, what do you think makes people share the space utilisations? Have you ever shared space utilisations of your plot with others? If yes, what made you share the space utilisations with others? please outline and scale, what uses of space do you share with others? Please outline and scale them
9. Are plots' boundaries changes common in this place? If yes, what do you think contributes to such changes? Please select one, more than one from the list below. Is your plot with its original size? If no, what changes have happened to your plot since you bought it? Please describe briefly changes you made on your dwellings together with reasons for the decisions (Use attached sketch of your plot attached in this questionnaire)
10. Are incremental modes of building and piecemeal mode of land disposal common practices in this place? If yes, what are common reasons making people build incrementally or sell land in piecemeal basis? Have you built your house incrementally? If yes, please describe briefly the phases of your dwelling construction together with the factors that were

influencing your decisions in each phase? (Use your dwelling layout sketch plan attached with this questionnaire)

- 11.** What do people say about leaving or coming to live at this place? What do you think are the common reasons for such views? Do you have plans to leave this place?
- 12.** Did the land formalisation and building permits programs influenced dwelling construction activities in this place? If yes, what are the impacts of these exercises to majority in this area? Please describe briefly. What do you think should be done to lower or eliminate the impacts of formalisation and building permit exercises in informal settlements including this area?

APPENDIX 3: Guiding questions to private practitioners (Professionals)

1. For how long have you been offering your services in informal settlements?
2. What professional services do you offer to clients in informal settlements?
3. Are there guidelines you follow when offering your services in informal settlements?
4. Do you sign contracts with your clients of informal settlements?
5. Are there challenges you face during your practice in informal settlements?
6. Are there lessons you learn from the informal settlements that could be of help in improving your practice in informal settlements?

APPENDIX 4: Guiding questions to private practitioners (non-professionals) to private practitioners like local masons, brokers, and land speculators

1. For how long have you been offering your services in informal settlements?
2. What services other common services most of you offer to your clients in informal settlements?
3. What are common factors that influence your plots shapes you subdivide, choice of dwelling construction technology and quality of buildings you construct?
4. Do most of you prepare dwelling designs prior to construction commencement or plot layout plans for their land before beginning subdividing them into plots?
5. Are there challenges relating to dwelling construction or plot subdivisions and selling you face during your practice in informal settlements?
6. Are there lessons you learn from the informal settlements that could be of help in improving your practice in informal settlements?
7. What are common factors that influence your plots shapes you subdivide, choice of dwelling construction technology and quality of buildings you construct? /Please outline
8. Do most of you prepare dwelling designs prior to construction commencement or plot layout plans for their land before beginning subdividing them into plots?

APPENDIX 5: Guiding questions on adaptation of informal spatial dynamics to public sector practitioners like Municipal architects, engineers and planners.

1. What activities were involved in adapting the informal spatial dynamics?
2. How were the adaptation activities related to one another?
3. What were the limits of adapting the informal spatial dynamics?
4. What was the adaptation system's feedback mechanism?
5. What resources were incurred in adapting the informal spatial dynamics?
6. How was the adaptation system efficient and effective?
7. What were the outcomes of adapting the informal spatial dynamics on urban form?
8. Were the outcomes of adaptation positive, negative, or neutral?
9. Does the process of legislation of land use and urban planning policies and regulations involve opinions of dwellers of informal settlements?
10. Are there challenges you face when implementing the land use policies and urban planning regulations in informal settlements?
11. Are there lessons the authority learns from the informal settlements that could be of help in improving their policies, regulations and programs?
12. Were there any development projects implemented in this area of your jurisdiction?
13. How do you acquire land for implementation of development projects?
14. Were there challenges you faced during implementation of such projects?
15. Has the program of formalisation of informal settlements and issuance of building permits ever influenced construction development in this area?
16. What do you think should be done to improve the process of formalisation and issuance of building permits in informal settlements?

APPENDIX 7: Questionnaires on land acquisition, organisation of space and adaptation of informal spatial dynamics to individual dwelling owners

A. INTRODUCTION

I am **Emmanuel John Liombo** a PhD student at Ardhi University. As main part of my studies, I am currently conducting research on **Urban form through adaptation of informal spatial dynamics: Case of Temeke and Kimara informal settlements in Dar es Salaam – Tanzania**. The respondent is assured that the information which will be provided will be strictly used for research purpose and the confidentiality is guaranteed. The respondent can add any valuable information related to the study on a separate sheet of paper where necessary as supplement.

B. IDENTIFICATION:/UTAMBULISHO

Street name:

Name of respondent (Optional):

Sex:

Occupation:

Level of education:

Service providers	TANESCO	<input type="checkbox"/>
	DAWASA	<input type="checkbox"/>
	Other providers add.....	<input type="checkbox"/>
Social groups associated with	VICOBA	<input type="checkbox"/>
	SACCOS	<input type="checkbox"/>
	PASADA	<input type="checkbox"/>
	Other groups please add	
Type of permit owned	Certificate of sale	<input type="checkbox"/>
	Building permit	<input type="checkbox"/>
	Residential licence	<input type="checkbox"/>
	Certificate of occupancy	<input type="checkbox"/>
	Others, please add	
Mode of land acquisition	Through broker	<input type="checkbox"/>
	Through people I know in the area	<input type="checkbox"/>
	Sub – ward officials	<input type="checkbox"/>
	Other please add	<input type="checkbox"/>
Drawings preparation	Architect;	<input type="checkbox"/>
	Local mason;	<input type="checkbox"/>
	Dwelling owner	<input type="checkbox"/>
	No drawings prepared	<input type="checkbox"/>
	Other person prepared drawings.....	

To assist in the analysis of questionnaires responses, please complete the following: -

Your age group

- 20 – 30.....
- 31 – 40.....
- 41 – 60.....
- Over 60.....

Please respond to the following questions by either ticking the appropriate box or by writing your answer in the space provided.

A. Questions about how people acquire land in informal settlements

1. When did you arrive at this place?

.....

2. Where did you arrive from when coming to this place?

.....

3. Why do people decide to reside in informal settlements?

- i. Easy availability of affordable land
- ii. Low price of plots
- iii. Low cost of living
- iv. Proximity to workplaces
- v. Inheritance
- vi. Being close to people they know

Other reasons, please outline,

.....
.....

What made you to come to stay at this place? Please describe briefly

.....
.....

10. What activities were performed in various stages of your plot development?

- i. Defining boundaries of plots
- ii. Creating circulation paths
- iii. Constructing new dwellings
- iv. Making extensions, additions and alterations to starter houses
- v. Disposing land

vi. Controlling access to spaces

Other issues, please outline,

.....
.....

4. What activities were involved in land acquisition at this place?

vii. Choice of urban location

viii. Search for information on land availability

ix. Carrying out negotiation of a land transaction

x. Plot adjudication and demarcation

xi. Evidencing land rights transfer

Other issues, please outline,

.....
.....

5. Who was involved in carrying the land acquisition activities at this place?

.....
.....

6. What tools were engaged in performing the land acquisition activities?

.....
.....

7. What rules were engaged in performing the land acquisition activities?

.....
.....

8. What were the roles of the actors in performing land acquisition activities?

.....
.....

9. What were the motives of performing the land acquisition activities?

.....
.....

B. Questions about how people organise space in informal settlements?

11. What activities were performed in various stages of your plot development?

- xii. Defining boundaries of plots
- xiii. Creating circulation paths
- xiv. Constructing new dwellings
- xv. Making extensions, additions and alterations to starter houses
- xvi. Disposing land
- xvii. Controlling access to spaces

Other issues, please outline,

.....
.....

12. Who was involved in carrying the space organisation activities at this place? Please, mention them

.....
.....

13. What tools were engaged in performing the space organisation activities?

.....
.....

14. What rules were engaged in performing the space organisation activities?

.....
.....

15. How labour was distributed among the actors in space organisation activities?

.....
.....

16. What was the motive behind carrying the space organisation activities?

.....
.....

C. Questions about the factors influencing the space organisation activities

17. Are there issues in this place which discourage dwelling owners to improve their dwellings?

- i. Yes.....
- ii. No.....

If yes, what are they? Please select one, more than one from the list below

- xviii. Lack of tenure security
- xix. Lack of service upgrading programs by government
- xx. Risks of evictions, environment e.g. soil erosions
- xxi. Risks of land acquisitions for infrastructure upgrading by GoT

Other issues, please outline,

.....
.....

What issues discouraged you to improve your dwelling (s)? Please describe briefly

.....
.....

18. What are common issues influencing plot owners' decisions on space organisation at plot level in this place?

- i. Limitations on plot size
- ii. Functions taking place in adjoining plots
- iii. Site condition e.g. terrain
- iv. Learning from others
- v. Functions to be accommodated in a plot

Other reasons, please outline,

.....
.....

What normally influence your decisions on layout of functions at plot level? Please describe briefly with the use of a sketch of layout of uses at your plot

.....
.....

19. What are common issues influencing developers' decisions on type and amount improvements to make on their dwellings in this place?

- vii. Economic capabilities
- viii. Brokers seductions
- ix. Spatial challenges e.g. limited size of plot
- x. Learning from others like neighbours
- xi. Needs like family size at a particular time

xii. Tenure insecurity

Other reasons, please outline,

.....
.....

* Please describe briefly What issues have often influenced your decisions on type and amount of improvements to make on your dwelling (s)? Please describe briefly changes you made on your dwellings together with reasons for the decisions (Use attached sketch of your plot attached in this questionnaire)

.....
.....

20. Is sharing of space utilisations e.g. conductance of ceremonies a common practice in this area?

i. Yes.....

ii. No.....

If yes, what do you think makes people share the space utilisations?

- i. Faith requirements
- ii. Strengthening social bond/connectivity
- iii. Concealing poverty surrounding one another in the area
- iv. Fear of being isolated with the larger community
- v. Faith requirements
- vi. Strengthening social bond/connectivity

Other reasons, please outline,

.....
.....

21. Have you ever shared space utilisations of your plot with others?

iii. Yes.....

iv. No.....

If yes, what made you share the space utilisations with others? Please, briefly explain,

.....
.....
.....

22. Are plots' boundaries changes common in this place?

- i. Yes.....
- ii. No.....

If yes, what do you think contributes to such changes? Please select one, more than one from the list below

- i. Conflicts relating to plot boundaries
- ii. Cutting and selling of land portions
- iii. Conning
- iv. Space appropriations

Other reasons, please outline,

.....

.....

23. Is your plot having its original size?

- iii. Yes.....
- iv. No.....

* If no, what changes have happened to your plot since you bought it? Please describe briefly changes you made on your dwellings together with reasons for the decisions (Use attached sketch of your plot attached in this questionnaire)

.....

.....

.....

.....

24. Is the incremental mode of building and the piecemeal mode of land disposal common practices at this place?

- i. Yes.....
- ii. No.....

If yes, what are common reasons making people build incrementally or sell land in piecemeal basis?

- i. Unsustainability of income
- ii. A norm
- iii. Rise of unexpected needs
- iv. Changes of goals, outcomes and expectations

Other reasons, please outline,

.....

.....

25. Have you built your house incrementally?

- iii. Yes.....
- iv. No.....

If yes, please describe briefly the phases of your dwelling construction together with the factors that were influencing your decisions in each phase? (Use your dwelling layout sketch plan attached with this questionnaire)

.....

.....

.....

.....

26. What do people say about leaving or coming to live at this place?

- i. Many dwellers of this place wish to leave this area
- ii. Many dwellers of this place like to stay at this place
- iii. People outside this place wish to come to live in this area

What do you think are the common reasons for such views?

- i. Investments (social or economic) they have made in this area
- ii. Being famous in the area
- iii. Lack of reasons pushing dwellers to leave the area
- iv. Rise in cost of living
- v. Environmental risks
- vi. Availability of risks of compulsory land acquisitions by government
- vii. Tenure insecurity

Other reasons, please outline,

.....

.....

Do you have plans to leave this place?

- i. Yes.....
- ii. No.....

27. Did the land formalisation and building permits programs influenced dwelling construction activities in this place?

- i. Yes.....
- ii. No.....

If yes, what are the impacts of these exercises to majority in this area? Please describe briefly

.....

.....

.....

28. What do you think should be done to lower or eliminate the impacts of formalisation and building permit exercises in informal settlements including this area?

- i. Offering of sensitization seminars to dwellers should be strengthened
- ii. Cost of the formalisation and building permits should be lowered
- iii. Bureaucracy in issuance of the CROs and building permits to be
- iv. Formalisation and building permits in informal settlements should be
- v. Issuance building permits to informal developers should be abolished

Other reasons, please outline,

.....
.....

APPENDIX 8: Questionnaires on adaptation of informal spatial dynamics to public sector practitioners (professional category)

These were such as municipal town planner, architect, engineers and local leaders at sub-ward level. Please answer only relevant questions to you

INTRODUCTION/UTANGULIZI

I am **Emmanuel John Liombo** a PhD student at Ardhi University. As main part of my studies, I am currently conducting research on **Urban form through adaptation of informal spatial dynamics: Case of Temeke and Kimara informal settlements in Dar es Salaam – Tanzania**. The respondent is assured that the information which will be provided will be strictly used for research purpose and the confidentiality is guaranteed. The respondent can add any valuable information related to the study on a separate sheet of paper where necessary as supplement.

B. IDENTIFICATION:/UTAMBULISHO

NAME OF OFFICE:

NAME OF RESPONDENT (optional).....

SEX OF RESPONDENT:

OCCUPATION:

To assist in the analysis of questionnaires responses, please complete the following: -

Your age group

20 – 30.....

31 – 40.....

41 – 60.....

Over 60.....

Please respond to the following questions by either ticking the appropriate box and by writing your answer in the space provided.

1. Do the process of legislation of land use and urban planning policies and regulations involve opinions of dwellers of informal settlements?

i. Yes

ii. No

2. Are there challenges you face when implementing the land use policies and urban planning regulations in informal settlements?

i. Yes

ii. No

If yes, what are the challenges? Please explain briefly

.....
.....
.....
.....

3. Are there lessons the authority learns from the informal settlements that could be of help in improving their policies, regulations and programs?

- i. Yes
- ii. No

If yes, what are the lessons? Please explain briefly

.....
.....
.....
.....

4. Are there any development projects that have ever taken place in your area of jurisdiction?

- i. Yes
- ii. No

If yes, who sponsored the projects?

.....
.....
.....
.....

5. How do you acquire land for implementation of development projects? Please explain briefly

.....
.....
.....
.....

6. Were there challenges you faced during implementation of such projects?

- i. Yes
- ii. No

If yes, what are the challenges? Please explain briefly

.....
.....
.....
.....

7. Has the program of formalisation of informal settlements and issuance of building permits ever influenced construction development in this area?

- i. Yes
- ii. No

If yes, how did it happen? Please explain briefly

.....
.....
.....
.....

8. What do you think should be done to improve the process of formalisation and issuance of building permits in informal settlements? Please explain briefly

.....
.....
.....
.....

APPENDIX 9: Questionnaires on land acquisition and organisation of space to private sector practitioners (professional category).

These were such as privately practising town planners, architects, and engineers (Please answer only relevant questions to you)

INTRODUCTION/UTANGULIZI

I am **Emmanuel John Liombo** a PhD student at Ardhi University. As main part of my studies, I am currently conducting research on **Urban form through adaptation of informal spatial dynamics: Case of Temeke Kisiwani and Kimara informal settlements in Dar es Salaam – Tanzania**. The respondent is assured that the information which will be provided will be strictly used for research purpose and the confidentiality is guaranteed. The respondent can add any valuable information related to the study on a separate sheet of paper where necessary as supplement.

B. IDENTIFICATION:/UTAMBULISHO

NAME OF RESPONDENT (optional)

SEX OF RESPONDENT

PROFESSION:

OCCUPATION:

To assist in the analysis of questionnaires responses, please complete the following: -

Your age group

- | | |
|--------------|--------------------------|
| 20 – 30..... | <input type="checkbox"/> |
| 31 – 40..... | <input type="checkbox"/> |
| 41 – 60..... | <input type="checkbox"/> |
| Over 60..... | <input type="checkbox"/> |

Please respond to the following questions by either ticking the appropriate box or by writing your answer in the space provided.

- For how long have you been offering your services in informal settlements?
 - More than two years
 - Less than two years
- Are there guidelines (e.g. bylaws) you follow in offering your services in informal settlements?
 - Yes
 - No

If no, what procedures do you follow? Please explain briefly

.....

.....
.....

3. Do you sign contracts with your clients of informal settlements?

i. Yes

ii. No

If yes, what type of contracts do you engage? Please explain briefly

i. Standard

ii. Made locally

4. Are there challenges you face during your practice in informal settlements?

i. Yes

ii. No

If yes, what are the challenges? Please explain briefly

.....
.....
.....
.....

5. Are there lessons you learn from the informal settlements that could be of help in improving your practice in informal settlements?

i. Yes

ii. No

If yes, what are the lessons? Please explain briefly

.....
.....
.....
.....

APPENDIX 10: Questionnaires on land acquisition and organisation of space to private sector practitioners (non - professional category)

These were such as land speculators, local masons, and brokers (Please answer only relevant questions to you)

UTANGULIZI

I am **Emmanuel John Liombo** a PhD student at Ardhi University. As main part of my studies, I am currently conducting research on **Urban form through adaptation of informal spatial dynamics: Case of Temeke Kisiwani and Kimara informal settlements in Dar es Salaam – Tanzania**. The respondent is assured that the information which will be provided will be strictly used for research purpose and the confidentiality is guaranteed. The respondent can add any valuable information related to the study on a separate sheet of paper where necessary as supplement.

These were such as land speculators, local masons, and brokers (Please answer only relevant questions to you)

B. IDENTIFICATION:/UTAMBULISHO

NAME OF OFFICE:

NAME OF RESPONDENT (optional).....

SEX OF RESPONDENT:

OCCUPATION:

To assist in the analysis of questionnaires responses, please complete the following: -

Your age group

20 – 30.....

31 – 40.....

41 – 60.....

Over 60.....

Please respond to the following questions by either ticking the appropriate box and by writing your answer in the space provided.

6. For how long have you been offering your services in informal settlements?

i. More than two years

ii. Less than two years

7. What is the common mode of land acquisition in informal/unplanned settlements?

xiii. Buying

xiv. Inheriting

xv. Just being offered

xvi. Grabbing

Other modes, please outline,

.....

8. What other services do you offer to your clients in informal areas?

- i. Buying
- ii. Inheriting
- iii. Just being offered
- iv. Grabbing

Other services, please outline,

.....

9. What are common factors influencing quality of services (quality of buildings constructed, plots sizes and shapes etc) you offer to your clients?

- i. Clients' economic capabilities
- ii. Clients' requirements
- iii. Project time
- iv. Quality of expected output e.g. a building
- v. Globalisation
- vi. Availability of building materials

Other factors, please outline,

.....

10. Do you prepare architectural drawings or plot layouts plans for your clients?

- i. Yes
- ii. No

11. If yes, to what extent have you been engaging professional experts e.g. planners, architects and engineers in preparing the drawings?

- i. Great extent
- ii. Moderate extent
- iii. Low extent

12. What criteria do most of you regard important in subdividing marketable plots?

- i. Market forces
- ii. Urban planning regulations
- iii. Targeted profit
- iv. Purchasing power of majority of land seekers

Other criteria, please outline,

.....
.....

13. Are there challenges most of you face during the offering of services to your clients?

- i. Yes
- ii. No

14. If yes, what are they?

- i. Plot boundaries conflicts
- ii. Difficult accessibility to sites
- iii. Low security at sites
- iv. Fluctuating clients' requirements

Other challenges, please outline,

.....
.....

APPENDIX 11: Research permit for Kilungule "A" area in Ubungo municipality**UBUNGO MUNICIPAL COUNCIL**

ALL CORRESPONDENCES TO BE ADDRESSED TO THE MUNICIPAL DIRECTOR

Tel: 0222-926341

Fax: 0222-926342

E mail info@ubungomc.go.tzWebsite: www.ubungomc.go.tz

In reply please quote:

Ref. AB.27/333/01

Emmanuel John Liombo,
Ardhi University,
P.O. Box 35176,
DAR ES SALAAM.



P. O. BOX 55068
DAR ES SALAAM.

DATE: 27/08/2020



MEO'S KILUNGULE A'NA
KILUNGULE B' MPOKEE
NDUGU HUYU MPE
USHIRIKIANO

RE: RESEARCH PERMIT

Refer to the above heading.

I am pleased to inform you that your above request has been considered by the Municipal Director, and has offered you a place to research attachment from **31 August, 2020 to 30 March, 2021** concerning "Emerging City Form through Adaption of Informal Spatial Dynamics".

Upon receipt of this letter, please report to the **Wards Executive Officer – Kimara** for commencement of your research.

During the period of research you are required to obey the rules and regulations of the institution.

Yours Sincerely.

B. A. Mwamende
For: **THE MUNICIPAL DIRECTOR**
UBUNGO

Copy: Deputy Vice Chancellor – Academic Affairs,
Ardhi University,
P.O. Box 35176,
DAR ES SALAAM.

APPENDIX 12: Research permit for Mamboleo "B" area in Temeke municipality

TEMEKE MUNICIPAL COUNCIL

[All letters should be addressed to the Municipal Director]

Tel: +255 22 2851054
 Fax: +255 22-2850640
 E-mail: temekemamisa@tmc.go.tz
 Website: www.tmc.go.tz



Ofisi ya Mkurugenzi
 92 Barabara ya
 Manda/taifa
 S.L.P: 46343,
 15833 - DAR ES SALAAM

Ref. No. TMC/MD/

Date: 01/19/2020

..... SANDALI
 TEMEKE MUNICIPAL COUNCIL

RE: RESEARCH PERMIT: EMMANUEL JOHN LIOMBO

Please refer to the heading above

This is to inform you that, permission is granted to the above mentioned student/Researcher from ARDHI UNIVERSITY to conduct research on EMERGING CITY FORM THROUGH ADAPTION OF INFORMAL SPATIAL DYNAMICS case study of TEMEKE MUNICIPAL

The study will be conducted from 7th Sept 2020 to 30th JULY 2021

Please give with necessary assistance.

.....
 For MUNICIPAL DIRECTOR
 TEMEKE

Apewe Ushirikiano

~~.....~~
 11/11/2020
 MUSA MTENDAJI KATA
 SANDALI

11/11/2020
 Amepokelewa ofisini
 ushirikiano Ushirikiano
 MUSA MTENDAJI WA MTAJI
 MAMBOLEO 'B'

APPENDIX 13: Building permit application form in Mamboleo "B"**HALMASHAURI YA MANISPAA YA UBUNGO****BARUA ZOTE ZITUMWE KWA MKURUGENZI WA MANISPAA**

Simu Na. 0222926341

Fax Na:

Unapojibu tafadhali taja:

KUMB. Na.....

**MKURUGENZI WA MANISPAA****MANISPAA YA UBUNGO****S. L. P. 55068****DAR ES SALAAM**

Tarehe:

**YAH: MAELEZO YA UTARATIBU WA KUWASILISHA MAOMBI YA KIBALI
CHA UJENZI KWENYE MAENEO YASIYOPIMWA**

Mwombaji wa kibali cha ujenzi kwenye maeneo yasiyopimwa anatakiwa kuwasilisha nyaraka zifuatazo:-

MTU BINAFSI:

- (i) Mchoro/ramani ya jengo.
- (ii) Uthibitisho wa uraia ambao unaweza kuwa nakala ya cheti cha kuzaliwa, pasi ya kusafiria au kitambulisho cha taifa vikiwa vimethibitisha kama nakala halisi au hati ya kiapo cha kuzaliwa.
- (iii) Fomu ya uhakiki iliyojazwa kikamilifu.
- (iv) Taarifa nyingine yoyote inayoweza kusaidia maombi yako km. Mkataba wa mauziano ya eneo husika.

MAKAMPUNI:

- (v) Certificate of incorporation (BRELA).
- (vi) Articles and Memorandum of Association.
- (vii) Uthibitisho wa uraia wa Wakurugenzi.

MAENEO YA IBADA

- (viii) Barua ya usajili wa Wadhamini (Kadhi Wasii Mkuu)

HALMASHAURI YA MANISPAA YA UBUNGO

BARUA ZOTE ZITUMWE KWA MKURUGENZI WA MANISPAA



FOMU YA MAOMBI YA KIBALI CHA UJENZI KWENYE MAENEO YASIYOPIMWA

PICHA

KUMBUKUMBU ZA UHAKIKI WA UMILIKI

- (1) ENEO LILILOHAKIKIWA WILAYA
- KATA
- MTAA WA
- JINA LA ENEO
- (2) MAJINA MATATU YA MWOMBAJI.....
- S. L. P. BARUA PEPE
- NAMBA YA SIMU
- (3) AINA YA JENGO
- | | |
|---------|--|
| GHOROFA | |
|---------|--|
- | | |
|-------|--|
| MFUTO | |
|-------|--|

KAMA NI GHOROFA NGAPI

- (4) MATUMIZI YA JENGO.....
- (5) UKUBWA ENEO
- (6) MUDA MWOMBAJI ALIOKAA KATIKA ENEO.....
- (7) MAENDELEZO YALIYOPO
- (8) MAELEZO YA ZIADA

MAJIRANI:**KASKAZINI**

JINA: SAHIHI SIMU

MASHARIKI

JINA: SAHIHI SIMU

KUSINI

JINA: SAHIHI SIMU

MAGHARIBI

JINA: SAHIHI SIMU

Mimi Mh. Diwani wa Kata/Afisa Mtendaji wa Kata/Afisa Mtendaji wa Serikali ya Mtaa/Mwenyekiti wa Serikali ya Mtaa ninathibitisha kwamba eneo/kiwanja hili/hiki ni mali yake mwombaji na linafaa kuendelezwa hivyo apewe kibali cha ujenzi anaomba.

Mwenyekiti wa Serikali ya Mtaa wa

Jina

Saini na mhuri

Tarehe

Afisa Mtendaji wa Serikali ya Mtaa wa.....

Jina

Saini na mhuri

Tarehe

Afisa Mtendaji wa Kata ya

Jina

Saini na mhuri

Tarehe

Mh. Diwani wa Kata ya

Jina

Saini na mhuri

Tarehe

Ninathibitisha kwamba taarifa nilizotoa ni za kweli na kwamba eneo hili ni mali yangu mimi mwenyewe na endapo atatokeza mtu mwingine kudai haki juu ya eneo au na itakapothibitika kuwa taarifa nilizotoa si za kweli nitawajibika mimi mwenyewe na Halmashauri haitahusika kwa namna yoyote ile.

Jina la Mwombaji:

Saini

Tarehe Simu

KWA MATUMIZI YA OFISI TU:**TAARIFA YA UKAGUZI****(A)MPIMA WA ARDHI**

- (i) Eneo linaloombewa kibali cha ujenzi lilishapimwa/halijapimwa kama kimepimwa taja namba ya ramani
Jina Saini Tarehe.....

(B) AFISA MIPANGO MIJI

- (i) Majira ya nukta (Coordinates)

Mashariki

(X)

.....
.....
.....
.....

Kaskazini

(Y)

.....
.....
.....
.....

Sketch Map:

- (ii) Namba ya mchoro wa Mipango Miji wa eneo linaloombewa kibali ujenzi ni TP. Drg. No.....
- (iii) Eneo linaloombewa kibali cha ujenzi linalingana/halilingani na mchoro wa Mipango Miji wa eneo hilo.
- (iv) Kiziduo kiambatanishwe kikiwa kina mhuri wa kusainiwa.
- (v) Kwa mujibu wa mchoro wa Mipango Miji eneo hilo limepangwa kwa matumizi ya
- (vi) Ujenzi ulioombwa ni

MAONI:

Sipendekezi/Napendekeza kibali kitolewe

Sababu

Jina

Cheo

Sahihi

Tarehe

(C)AFISA ARDHI:

(i) Eneo linaloombewa kibali cha ujenzi linamilikiwa na
wa S. L. P. halimilikiwi na mtu au Taasisi yoyote.

Jina

Cheo

Sahihi

Tarehe

MAONI YA JUMLA: (MKUU WA IDARA)

Kutokana na maoni yaliyotolewa, eneo hilo linafaa/halifai kutolewa kibali cha ujenzi.

Sababu

Jina

Cheo

Sahihi

Tarehe

APPENDIX 14: Filled building permit application form in Kilungule "A"

MAJ. KASHI
 JINA: MASHAURI
 JINA: MASHAURI M. KUSANTU SIMU: 07634 1193
 MERINA
 KUSINI: MAS LEZIFA SAINI: Ramat SIMU: 0782 078183
 JINA: MAR CHWA SAINI: Roba SIMU: 0717 483648

MAGHARIBI:
 JINA: MAR CHWA SAINI: Roba SIMU: 0717 483648

Mimi Mh. Diwani wa Kata/ Afisa Mtendaji wa Kata/ Afisa Mtendaji wa Serikali ya Mtaa/ Mwenyekiti wa Serikali ya Mtaa ninathibitisha kwamba eneo/kiwanja hili/hiki ni mali yake mwombaji na linafaa kuendelezwa hivyo apewe kibali cha ujenzi anaomba.

Mwenyekiti wa Serikali ya Mtaa wa KILUNGULE A
 Jina: KAIN KYEJO
 Saini na Mhuri: [Signature]
 Tarehe: 30/6/2021

Afisa Mtendaji wa Serikali ya Mtaa wa KILUNGULE
 Jina: JOSHUA W. AYUNDA
 Saini na Mhuri: [Signature]
 Tarehe: 30/6/2021

Afisa Mtendaji wa Kata ya KUMARA
 Jina: JOSHUA AYUNDA
 Saini na Mhuri: [Signature]
 Tarehe: 30/6/2021

Mh. Diwani wa Kata ya
 Jina:
 Saini na Mhuri:
 Tarehe:

Ninathibitisha kwamba taarifa nilizotoa ni za kweli na kwamba eneo hili ni mali yangu mimi mwenyewe na endapo atatokeza mtu mwingine kudai haki juu ya eneo au na itakapothibitika kuwa taarifa nilizotoa si za kweli nitawajibika mimi mwenyewe na Halmashauri haitahusika kwa namna yoyote ile.

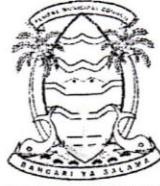
Jina la Mwombaji:
ALUF. ADAM SAUDI
 Saini: [Signature]
 Tarehe: 30/6/2021 Namba ya Simu: 0717067756

2

APPENDIX 15: Certificate of land sales in informal settlements

HALMASHAURI YA MANISPAA YA TEMEKE

FAX: +255-22 2850640
S.L.P 46343
SIMU: 0713962923/0784 202899
0717 030835



OFISI YA SERIKALI YA MTA
MTAA WA MAMBOLEO "B"
KATA YA SANDALI
TEMEKE
DAR ES SALAAM

Kumb: Na. MBL B/UTB/V...../013

TAREHE:

**YAH: MKATABA WA MAUZIANO
YANYUMBA/KIWANJA/PIKIPIKI/GARI/.....**

Mimi/Sisi
nikiwa/tukiwa na akili zangu/zetu timamu kabisa bila ya kushawishiwa na mtu yeyote
nimeamua/tumeamua kummuzia mali yangu/yetu aina ya ndugu
.....kwa gharama ya
shilingi.....
(Tshs.....) ambayo amezilipa zote/anadaiwa shilingi
.....ambapo atamalizia tarehe.....

Uthibitsho wa uuzaji huu wa mali ambayo ni halali kwa muuzaji/wauzaji na halali kwa
mnunuzi/wanunuzi umefanyika mbele ya mashuhuda wafuatao:-

MUUZAJI/WAUZAJI

1. Sahihi
2. Sahihi
3. Sahihi

SHAHIDI

1. Jina..... Sahihi
2. Jina..... Sahihi

MNUNUZI/WANUNUZI

1. Sahihi
2. Sahihi
3. Sahihi

SHAHIDI

1. Jina..... Sahihi
2. Jina..... Sahihi

Mauziano haya yamefanyika mbele ya Ofisi ya Serikali ya Mtaa chini ya:-

.....
**ZUBERI KABUMAYE
M/KITI WA S/MTAA**

APPENDIX 16: Space utilisation permit application form in Mamboleo "B"

HALMASHAURI YA MANISPAA YA TEMEKE

S.L.P. 46343
 FAX: +255-22 2850640.
 Kumb: TMK/SDL/MBL 'B'/020



OFISI YA SERIKALI YA MTA
 MTA WA MAMBOLEO 'B'
 KATA YA SANDALI - TEMEKE
 DAR ES SALAAM.

TAREHE:

Kumb No: SAND/MBL 'B'

.....

YAH: KIBALI CHA

A. Mtajwa hapo juu amepewa kibali cha kufanya shughuli/sherehe ya.....kuanzia tarehe..... hadi tarehe.....saa..... Unatakiwa kuzingatia mambo yafuatayo kabla ya kuanza taratibu za shughuli/sherehe.

- Usafi wa Choni
- Msichangie maji ya kunywa katika kifaa kimoja au kunawa.
- Kelele zisizidi kupita kiasi cha kuwakera watu wengine.
- Imarisha ulinzi katika eneo unalofanyia shughuli/sherehe.
- Endapo utahitaji ulinzi wa sungusungu kwa malipo ya Tshs, 10,000/= kwa mkasha, na Tshs 5,000/= kwa kutwa.

Kutokuzingatia hayo hapo juu utachukuliwa hatua za kisheria ikiwa ni pamoja kufutiwa kibali.

Ahsante,

.....
REGINA GAHWA
AFISA MTENDAJI WA MTA
MTAA WA MAMBOLEO 'B'

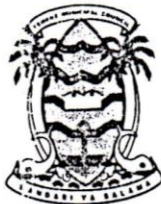
B. MimiMkuu wa kituo cha polisi Mamboleo 'B' nakubaliana na kibali hiki kitumike kama ilivyotolewa na uongozi wa Mtaa wa Mamboleo 'A' isipokuwa kama utashindwa kuzingatia yaliyoainishwa katika kibali hiki utafutiwa kibali mara moja. Sahihi ya Mkuu wa Kituo

HALMASHAURI YA MANISPAA YA TEMEKE

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OFISI YA SERIKALI YA MTA
MTAA WA MAMBOLEO 'B'
KATA YA SANDALI - TEMEKE
DAR ES SALAAM.

TAREHE:

Kumb No: SAND/MBL 'B'

.....

.....

.....

YAH: KIBALI CHA

A. Mtajwa hapo juu amepewa kibali cha kufanya shughuli/sherehe ya.....kuanzia tarehe..... hadi tarehe.....saa..... Unatakiwa kuzingatia mambo yafuatayo kabla ya kuanza taratibu za shughuli/sherehe.

- Usafi wa Choni
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- Kelele zisizidi kupita kiasi cha kuwakera watu wengine.
- Imarisha ulinzi katika eneo unalofanyia shughuli/sherehe.
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Kutokuzingatia hayo hapo juu utachukuliwa hatua za kisheria ikiwa ni pamoja kufutiwa kibali.

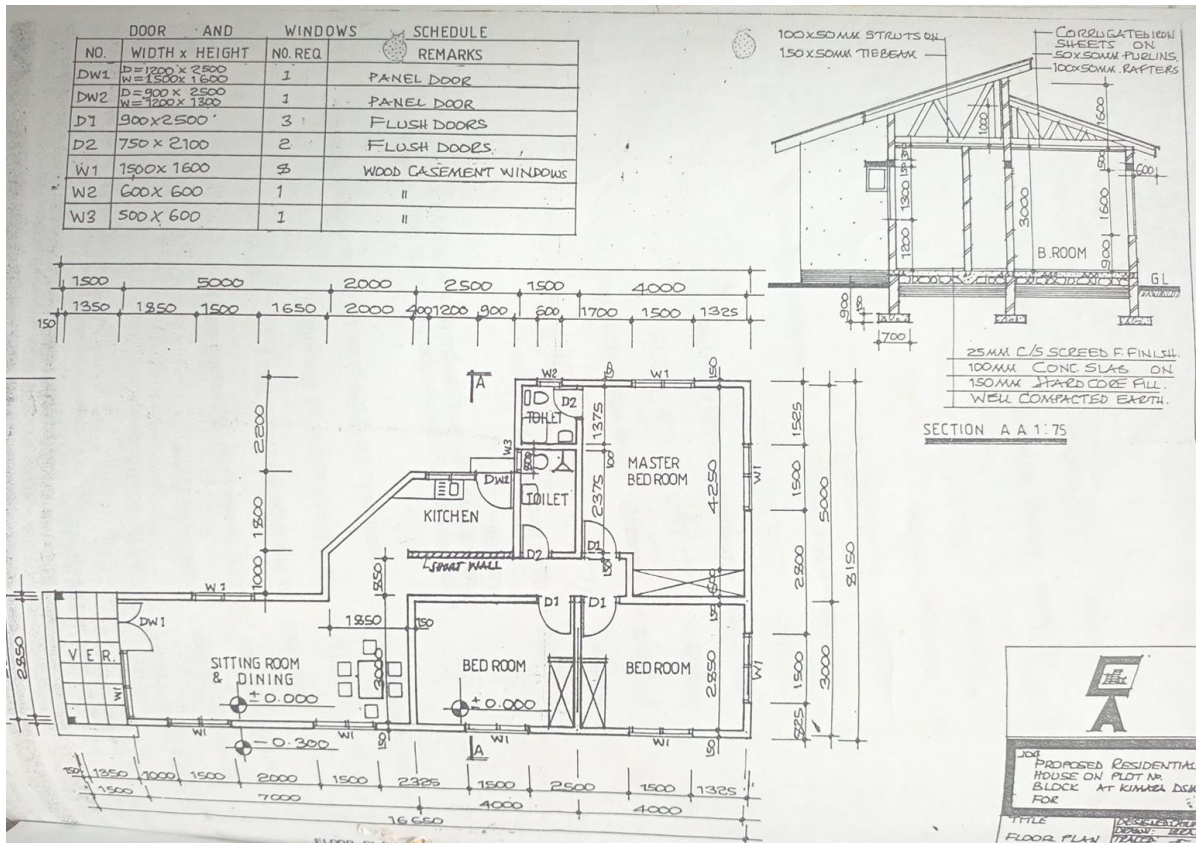
Ahsante,

.....

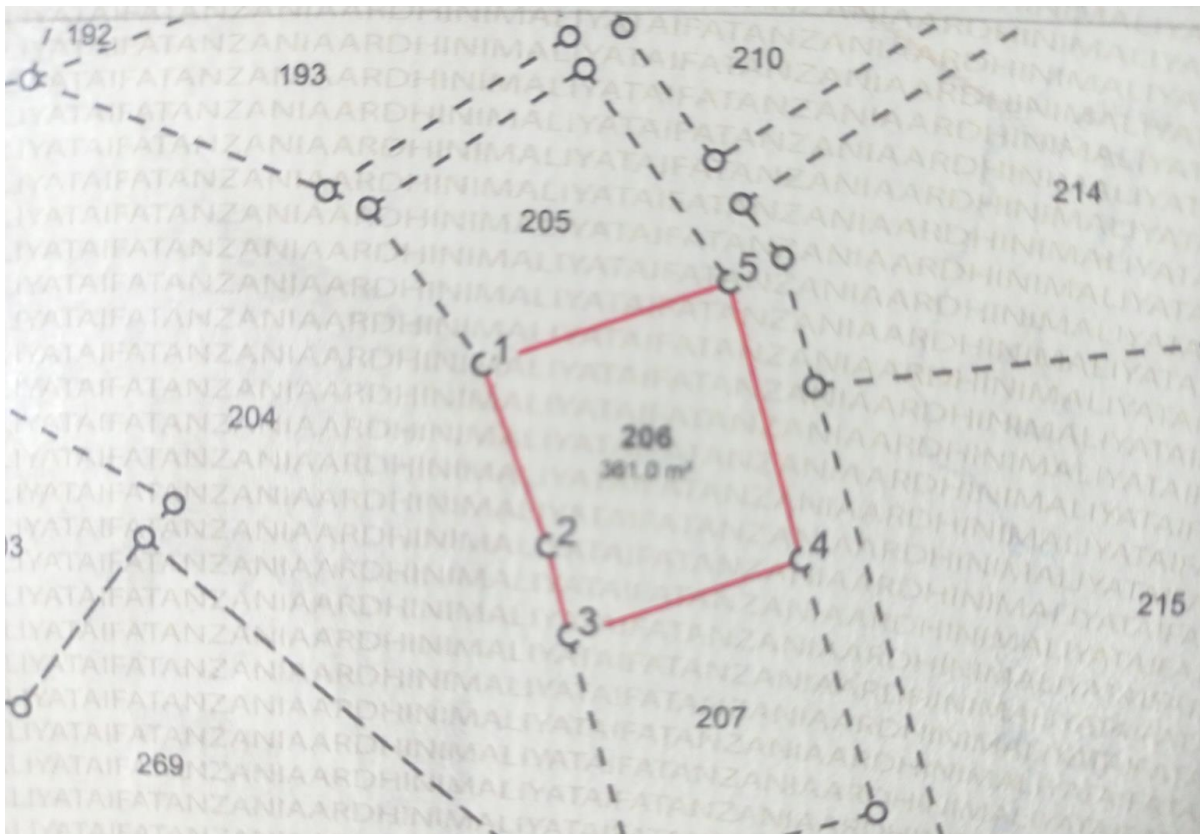
REGINA GAHWA
AFISA MTENDAJI WA MTA
MTAA WA MAMBOLEO 'B'

B. MimiMkuu wa kituo cha polisi Mamboleo 'B' nakubaliana na kibali hiki kitumike kama ilivyotolewa na uongozi wa Mtaa wa Mamboleo 'A' isipokuwa kama utashindwa kuzingatia yaliyoainishwa katika kibali hiki utafutiwa kibali mara moja. Sahihi ya Mkuu wa Kituo

APPENDIX 17: Mr. Magwe's architectural drawings in Kilungule "A"



APPENDIX 18: Mr. Magwe's certificate of occupancy (CRO) in Kilungule "A"



APPENDIX 19: Contract of land sale in Kilungule "A"

12 SEPTEMBER, 1997

HATI YA MAUZO YA SHAMBA

MIMI HAMZA ABEDI NIKIWA NA AKILI TIMAMU BILA KUSHAWISHIWA NA MTU YEYOTE NIMEUZA SEHEMU YA SHAMBA LANGU LENYE UKUBWA WA MITA 20 KWA 24 KWA BI HADIJA NURU KANIKI KWA THAMANI YA SHS. 350,000/= (LAKI TATU NA NUSU) NA AMELIPA FEDHA ZOTE. MAUZO HAYA YAMEFANYIKA MBELE YA MJUMBE WA SHINA MZEE OMARI HALFANI PULUKU NA MASHAHIDI WAFUATAO:-

MWENYESHAMBA

Hamza Abedi

 HAMZA ABEDI

MNUNUZI

Hadija Nuru Kaniki

 HADIJA NURU KANIKI

MASHAHIDI:

1. RAJABU NASIBU
2. JULIUS JUMA

SAHIHI YA MASHAHIDI:

Rajabu Nasibu

Julius Juma

SAHIHI NA MUHURI WA MJUMBE:

Omari Halfani Puluku

 OMARI HALFANI PULUKU

ENYEKITI WA CCM
 AKIMARA KILUNGULE

.....
 MUHURI