TECH HUBS AND URBAN TRANSFORMATION: THE CASE OF YABA AS A TECHNOLOGY HUB

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ABSTRACT
This paper investigates the relationship between the emergence of Yaba as a prominent technology hub and the patterns of urban transformation it has engendered in Lagos, Nigeria. By employing a mixed-methods approach that combines qualitative and quantitative research, the study examines the analysis of spatial dynamics, and identifies the mechanisms driving urban change in Yaba. The findings reveal significant demographic shifts, changes in land use, and evolving community identities as a result of technological growth. Furthermore, the research highlights the implications of these transformations for urban planning and community development, emphasizing the need for inclusive strategies that address issues such as displacement and housing affordability. This study contributes to the existing literature on urban transformation in the Global South and provides practical recommendations for policymakers and stakeholders to foster sustainable urban growth in technology-driven environments.

Key words: Tech Hubs, Urban transformation, Innovation, driving mechanism
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1. INTRODUCTION

The role of technology in enhancing economic activities cannot be overemphasized (Nkwatoh, 2022). In the 21st century, technology hubs, or tech hubs, have become powerful engines of economic growth and innovation worldwide. Cities such as San Francisco, London, and Beijing have transformed into global centers for technology-driven economies, with hubs that house start-ups, research institutions, and major tech companies. These urban areas thrive by fostering innovation ecosystems—environments where technological ideas can be cultivated, shared, and commercialised. The emergence of these hubs is typically tied to advancements in infrastructure, a skilled labor force, access to venture capital, and governmental policies that support entrepreneurship and innovation (Florida, 2002). The global rise of tech hubs has had transformative effects on urban economies. Silicon Valley, often cited as the quintessential tech hub, has become synonymous with the disruptive innovation associated with companies like Apple, Google, and Facebook (Schumpeter, 1942). However, while tech hubs contribute significantly to economic growth and job creation, they also present socio-economic challenges, including rising income inequality, gentrification, and displacement of lower-income residents (Zukin, 2010). These challenges have been well-documented in urban areas, where tech-driven growth exacerbates existing inequalities and alters the socio-cultural landscape.

Tech hubs are no longer exclusive to developed nations. The phenomenon has spread to emerging markets, particularly in Asia, Latin America, and Africa. As governments and private investors look to tap into the economic potential of digital economies, cities in developing regions have begun to develop their own tech ecosystems. Nairobi's "Silicon Savannah," Cape

Town's "Silicon Cape," represent a new frontier in global technology development. These hubs offer the potential for job creation, digital innovation, and economic diversification. However, they also face unique challenges, including inadequate infrastructure, limited access to capital, and socio-economic inequalities (Wong, 2022).

In the context of Africa, a developing continent (Olise, et al, 2023), the rise of tech hubs has been particularly pronounced, with cities like Lagos positioning themselves as key players in the continent's technological landscape. Yaba, a neighborhood in Lagos, has emerged as a prominent technology hub, attracting a diverse array of startups, educational institutions, and investment (Alden et al., 2019). This transformation has positioned Yaba as a vibrant center for technology and innovation, contributing to Lagos's reputation as a leading tech city in Africa (Adeola & Sridhar, 2020). The growth of Yaba as a tech hub has not only stimulated local economic development but has also attracted attention from global investors and tech enthusiasts, further enhancing its status as a center for technological innovation. However, while Yaba's tech-driven growth has created opportunities for digital entrepreneurs, it has also exacerbated urban inequalities. As property prices increase and the area becomes more attractive to affluent professionals, long-standing residents face displacement. Much like in other global tech hubs, the rise of Yaba highlights the tensions between economic growth and social equity. While the tech sector brings wealth and innovation, it also threatens to displace marginalized communities that are unable to participate in the benefits of the digital economy (Shaw & Hagemans, 2015). Moreover, the lack of inclusive policies in tech hub development has further widened the socio-economic divide in Yaba. For instance, while tech hubs offer significant opportunities for skilled workers, they often exclude those without formal education or digital skills. This has created a dual economy, where the benefits of tech-driven growth are concentrated among a small, highly skilled population, while the majority of residents remain economically marginalized (Waldinger, 2018).

By investigating the socio-economic and spatial dimensions of gentrification in Yaba, this study aims to shed light on the specific mechanisms driving these changes and their implications for local residents, businesses, and institutions. The findings will contribute to advancing theoretical debates on the relationship between technology, urbanization, and socio-spatial change, providing valuable insights for stakeholders involved in the development of Yaba as a technology hub. Furthermore, the study's empirical findings and evidence-based recommendations are expected to inform decision-making processes and interventions aimed at promoting inclusive and sustainable urban development in Yaba and similar areas. The specific study objectives are:

i. To examination of the effect of Hub tech on urban infrastructure in the study area
ii. To examine the effect of Hub tech on the local businesses in the study area
iii. To analysis the spatial dynamics of urban transformation in the study area
iv. To identify the mechanism driving urban transformation in the study area

2. LITERATURE REVIEW

Technology hubs are defined as concentrated areas that foster innovation, entrepreneurship, and the growth of tech-related industries. They are typically characterized by the presence of technology companies, startups, research institutions, and supportive infrastructure such as co-working spaces and incubators (Florida, 2002; Wong, 2022). These hubs serve as catalysts for economic growth, attracting talent, investment, and attention from both local and global stakeholders (Caragliu et al., 2021). The literature emphasizes that technology hubs not only contribute to economic development but also reshape urban landscapes and social relations (Audretsch & Feldman, 2016).

2.1 Theoretical Literature

This study adopts a conceptual framework that integrates theories from urban sociology, economic geography, and innovation studies to understand the dual role of technology hubs in driving economic growth and contributing to urban inequality. The framework focuses on four key dimensions: (1) technology hubs as catalysts for urban growth, (2) the duality of economic growth and social displacement, (3) mechanisms of urban transformation, and (4) the importance of inclusive growth and policy responses.

Technology Hubs as Catalysts for Urban Growth

Technology hubs are powerful engines of economic growth, driving urban transformation by attracting investment, talent, and infrastructure development. This process is often framed in terms of creative destruction, a concept introduced by Schumpeter (1942), where new industries replace outdated economic structures, leading to innovation and growth. In the context of Yaba, the development of the tech ecosystem has stimulated infrastructure development, including the construction of modern office spaces, improved transportation networks, and increased digital connectivity (Wong, 2022). These improvements have not only attracted local and international firms but also positioned Yaba as a central node in Lagos's broader urban economy.

Duality of Economic Growth and Social Displacement

While tech hubs generate economic growth, they also contribute to socio-economic polarization. This framework draws on Castells' (1996) theory of spatial inequality to explore the dual nature of urban transformation. In Yaba, as in other tech hubs, the influx of wealthier tech professionals has led to increased property values, resulting in the displacement of long-term, lower-income residents. This process is further exacerbated by weak regulatory frameworks, which fail to protect vulnerable populations from the pressures of gentrification and rising living costs (Turok, 2016).

Mechanisms of Urban Transformation

The urban transformation driven by tech hubs involves multiple mechanisms, including changes in land use, real estate development, and demographic shifts. Katz and Wagner's (2014) theory of innovation districts provide a useful lens for understanding how tech hubs reshape urban spaces. Innovation districts, characterized by the clustering of technology firms, research institutions, and start-ups, foster an environment conducive to innovation but also lead to the commercialization of urban spaces. In Yaba, the establishment of tech incubators and start-up hubs has attracted a new demographic of young, educated professionals, further driving gentrification and social change (Florida, 2002).

Inclusive Growth and Policy Responses

Finally, the framework emphasizes the need for inclusive growth strategies to mitigate the negative consequences of urban transformation. Turok (2016) argues that sustainable urban development requires policies that ensure equitable access to housing, infrastructure, and economic opportunities. In the case of Yaba, this includes implementing affordable housing policies, promoting local entrepreneurship, and fostering community engagement to ensure that the benefits of tech hub development are shared broadly (Akinpelu, 2019). Without such policies, the growth of tech hubs may deepen socio-economic divides and perpetuate inequality.

2.2 Empirical studies

Shao, Yuahn, Zhao & Gu.(2024) investigated Sci-tech innovation, industrial structure transformation and economic development: An empirical study based on province panel data in China and concluded that technological innovation has a significant promoting effect on economic development, and economic development can also promote technological innovation. Adler, P. & Florida, R. (2021) investigated the rise of urban tech: how innovations

for cities come from cities and found that the geography of urban tech is shaped by the innovation capabilities of urban areas and, to a lesser extent, by urbanization itself. Oyebanji, O.A., & Adeniyi, E.A (2020) investigated the impact of tech hubs on urban development in Lagos, Nigeria. The study found that tech hubs have contributed to urban development in Lagos by creating jobs, stimulating innovation, and improving the quality of life. Agunbiade, M.E., & Oyedele, L.O. (2019) investigated the role of tech hubs in urban regeneration: a case of Yaba, Lagos. The study revealed that tech hubs have played a significant role in urban regeneration, by attracting investment. Akinyemi, A. O., & Adegboyega, A. B. (2018) investigated the effect of tech hubs on urban economic growth in Nigeria. The study found that tech hub impact urban economic growth in Nigeria, as they create jobs, stimulate innovation, and attract investment. Ojo, A.I, & Adeniyi, E.A. (2019) investigating the role of tech hubs in promoting sustainable development in Nigeria. The study found that tech hubs have the potential to promote sustainable urban development in Nigeria.

3. RESEARCH METHODOLOGY

3.1 Theoretical Framework

The development of technology hubs is deeply embedded within broader theoretical constructs of urban transformation, economic geography, and innovation studies. These frameworks offer explanations for the spatial, economic, and social dynamics observed in cities like Lagos, where tech hubs such as Yaba have emerged. The theoretical framework for this study draws on multiple interrelated theories to better understand the processes driving tech hub development and their socio-economic implications.

3.2 Model Specification

In the conduct of this study, a descriptive survey research design was be adopted. This is because the opinion of residents in Yaba, Lagos State were surveyed about the variables under the investigation. The data for this study were collected through primary and secondary data sources. Primary data were obtained through the use of field observation and administration of questionnaires. Secondary data were collected from existing publications and research. Therefore, such data were gathered from white papers, government releases, editorial in newspapers, editorials in journals, newsletters, non-published dissertations, published dissertations, conference papers, institution of higher learning publications, peer reviewed and non-peer reviewed journals, professional bodies' journals, international journals, regional journals, published books, and online books amongst others. The sampling frame focuses on both residents and workers in Yaba. According to Wikipedia, the estimated population in Yaba is 700,000. Data were collected through questionnaires and distributed across various streets within Yaba to capture different perspectives and experiences. To determine the sample size which according to Farinmade (2024) is the total number of items from which the required information is extracted, Yamane's formula was used. This formula is:

$$N = \frac{N.Z^2p(1-p)}{e^2 (N-1)+Z^2p(1-p)}$$

where:
n is the sample size.
N is the population size.
Z is the Z-score (1.96 for a 95% confidence level).
p is the estimated proportion of the population (0.5).
e is the margin of error (0.07 for a 7% margin of error).

Let's calculate the sample size using this formula:

$$n = \frac{700{,}000 \cdot (1.96)2 \cdot 0.5 \cdot (1-0.5)}{(0.07)2 \cdot (700{,}000-1)+(1.96)2 \cdot 0.5 \cdot (1-0.5)}$$

Computing the values for the numerator and the denominator:

$$n = \frac{700{,}000 \cdot 3.8416 \cdot 0.25}{0.0049 \cdot 699{,}999+3.8416 \cdot 0.25}$$

$$n = \frac{700{,}0000 \cdot 0.9604}{2{,}927.2551+0.9604}$$

$$\frac{574{,}227.36}{2{,}928.2155}$$

$n \approx 200.21$

Since sample size must be a whole number, we round up to 200.The sampling technique used in this study was systematic random sampling. This study accurately capture the diverse perspectives and experiences within the community by including residents and workers in the sampling frame and randomly selected participants of the questionnaire survey. A total of 200 questionnaires were administered among the stakeholders, while 170 (85%) were retrieved in the following order; Tech entrepreneurs (30%), local residents (40%), Government officials (10%), Urban planners (10%), and others 10% (which include academics and real estate developers) .The data collected through the questionnaires were analyzed using both quantitative methods to provide a comprehensive understanding of the socio-economic characteristics of gentrification in Yaba, Lagos, in its emergence as a technology hub. 20 key stakeholders were interviewed, focusing on urban development, challenges in the tech ecosystem, and sustainability issues. The quantitative data were analyzed using statistical techniques and descriptive statistics like frequencies and percentages, to summarize the demographic characteristics and key responses of the participants. This approach allowed for a robust numerical analysis which offered a holistic view of the socio-economic changes occurring in Yaba due to gentrification. The data gathered were analyzed using the SPSS software version 2.0

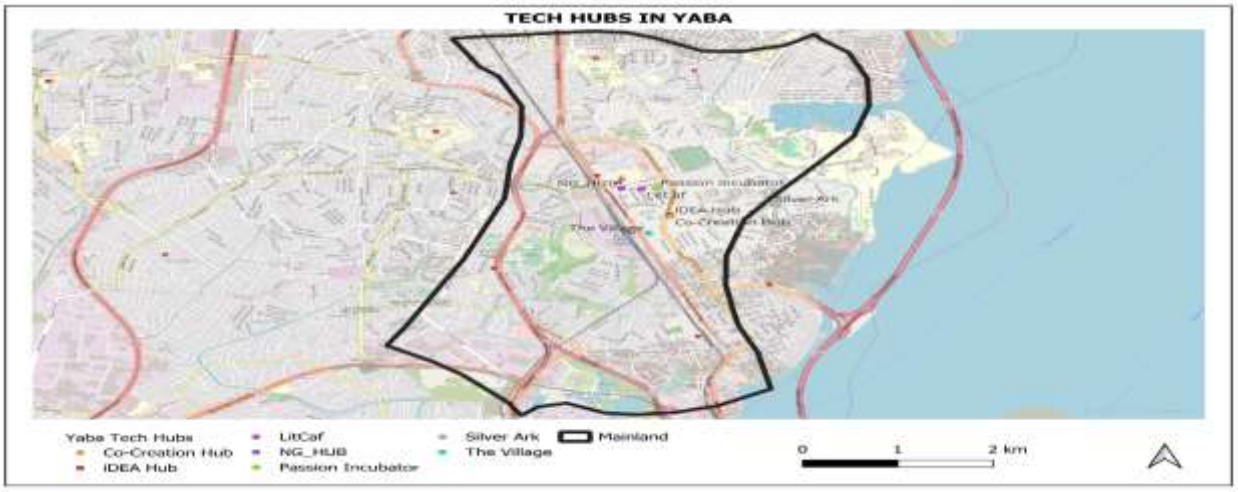
4. RESULTS AND DISCUSSION

Table 1 show case the existing Tech Hubs and their addresses in the study area. They include: NG HUB, Passion Incubator, and the village, Idea Hub, LithCaf, Silver Ark, and Co-Creation Hub. Their exact locations are shown in fig 1.

Table 1: Name and Address of Tech Hubs in Yaba, Lagos

S/N	Name	Address
1	NG_HUB	8, Montgomery Road, Yaba, Lagos, Nigeria.
2	Passion Incubator	34 McNell Road, off Montgomery Road, Yaba, Lagos, Nigeria.
3	The Village	371, Borno Way Spdfgghencer, Yaba, Lagos
4	iDEA Hub	296 Herbert Macaulay Way, Sabo, Yaba Lagos State
5	LitCaf	1st Floor, E-Center, Commercial Avenue, Sabo, Yaba. Lagos
6	Silver Ark	2nd Floor, 47, Iwaya Road, Onike, Yaba, Lagos
7	Co-Creation Hub	6th Floor, 294 Herbert Macaulay Way, Sabo, Yaba, Lagos.

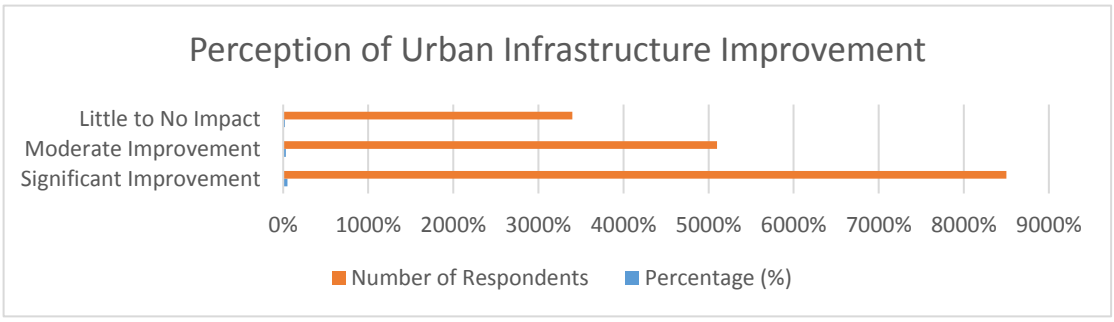
Figure 1. Map showing Tech Hubs location in Yaba



Perceived Impact on Urban Infrastructure.

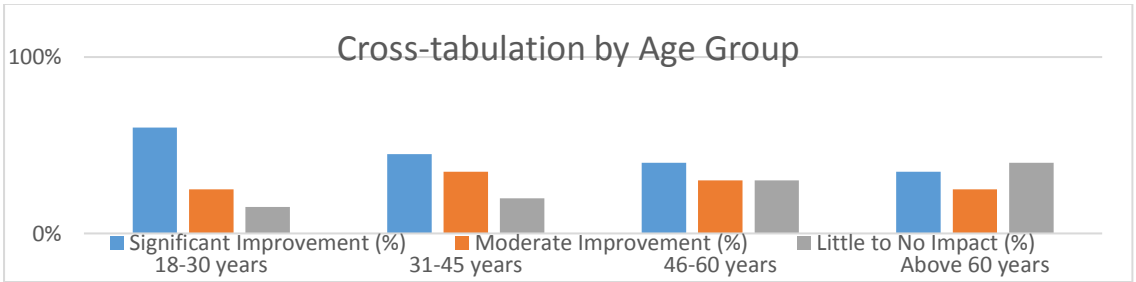
The quantitative data collected is analyzed to provide insights into various aspects of Yaba's urban transformation. Respondents evaluated the impact of Yaba's tech hub status on urban infrastructure. From fig 2, majority (50%) of the respondents noted significant improvement in road networks, electricity supply and internet connectivity. This is particularly of interest in a nation that faces significant challenges in unreliable power supply and inadequate infrastructure (Fayose & Olayiwola, 2023).

Fig 2: Distribution of perceptions



Cross-tabulation (Fig 3) shows that younger respondents (18-30 years) were more likely to report significant improvements, likely due to their familiarity with tech infrastructure needs.30% of the respondents noted moderate improvement, which is an indication that some area have benefited than others. 20% of the respondents noted little or no impact. Demographic correlation from the cross tabulation table signifies older residents (above 60 years) were more likely to report minimal impact, possibly due to slower adoption of new technologies or exclusion from tech-driven developments.

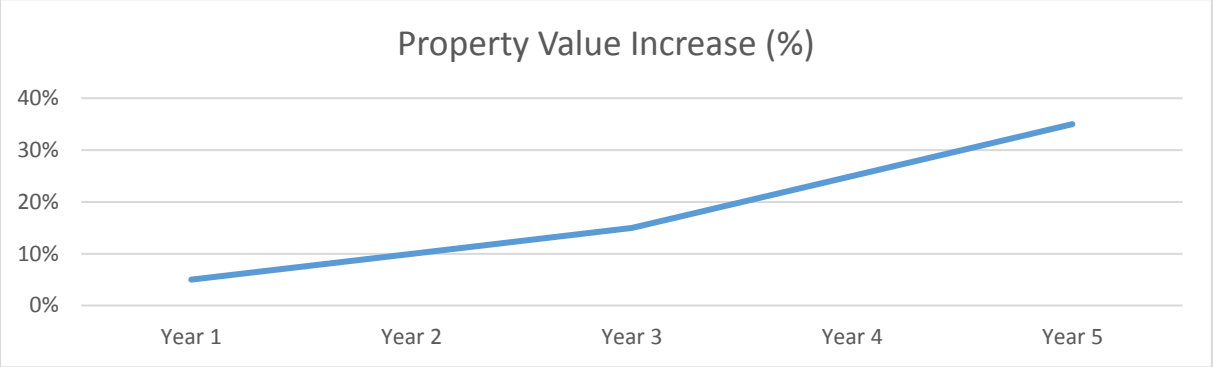
Fig 3: Breakdown by age group



Change in Property Values

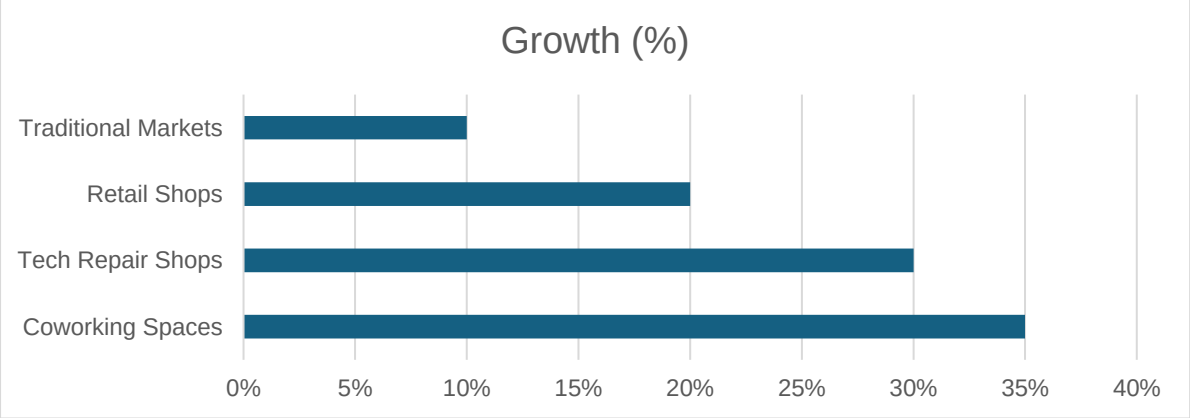
Respondents observed changes in property values in Yaba following its development as a tech hub.60% of the respondents indicated significant increase in the property values and this was ascribed to high demand brought about by tech professionals. A comparison with the historical data reveals that property values in Yaba have risen by average of 35% over the past five years (Fig. 4). This finding is in agreement with the previous studies by Oyebanji & Adeniyi (2020) in their study that found tech hubs to have contributed to urban development in Lagos by creating jobs, stimulating innovation, and improving the quality of life. Meanwhile, 25% of the respondents indicated moderate increase noted in less central area. Subjecting this to locational analysis, it is observed that property value increases are most pronounced near tech hubs like Co-Creation Hub, with lesser increases in residential areas. 15% of the respondents reported no significant change and when subjected to socioeconomic analysis, the analysis shows that areas with little change are home to lower-income residents, indicating potential inequalities in the benefits of urban transformation.

Fig 4: Influence on Property Value



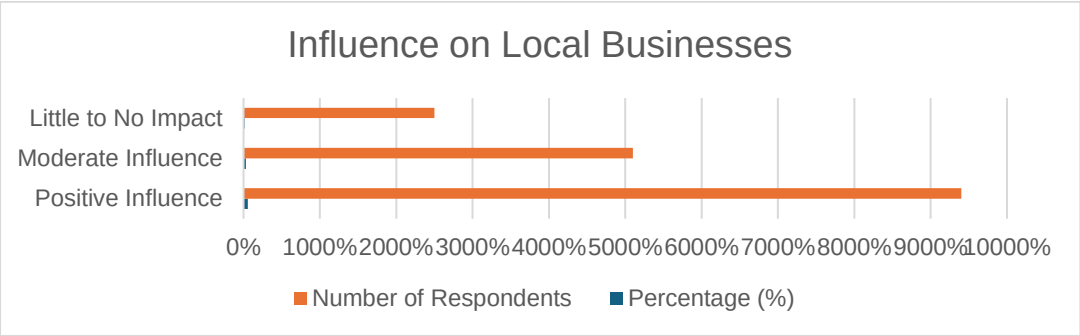
Majority of the respondents noted an increased demand for services like coworking spaces, cafes, and retail, indicating positive influence on local businesses and this is in agreement with the ITC (2019) that affirmed that hub techs fostered innovation and entrepreneurship through coworking spaces, incubators, and accelerators. A deeper look into the types of businesses reveals that service-oriented businesses have seen the most growth, while traditional markets have struggled to keep pace. About 30% of the respondents indicated moderate impact.

Fig 5: The tech hub's influence on local businesses was assessed.



Only certain businesses have benefited. Derivable fact here is that local businesses catering directly to tech workers (e.g., tech repair shops, eateries) have thrived, as reported by one the interviewed respondent declared,*"Yaba is where the action is. With so many startups and tech events happening, I knew I had to be here to stay connected and relevant in the industry* while others have faced challenges adapting to the new market dynamics.

Figure 6: Perceived influence on Local Business

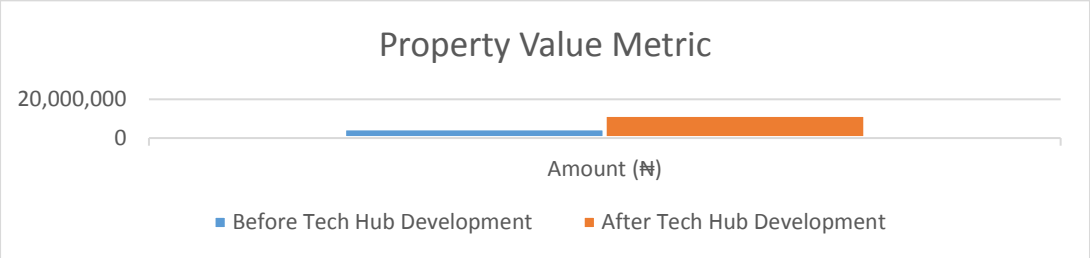


The 15% response indicating no impact is a reflection of minimal influence on businesses not integrated into the tech ecosystem. It is a reflection of impact of spatial distribution of activities as it becomes evident that businesses located further from the tech hubs, particularly in residential zones, have reported less impact.

Spatial Dynamics of Urban Transformation in Yaba

The spatial dynamics of urban transformation in Yaba are characterized by significant changes in land use, demographic shifts, and the physical landscape as the area evolves into a technology hub. In the analysis of the spatial dynamics, focusing on how the emergence of the technology sector has reshaped the urban environment and influenced the socio-economic fabric of the community, fig 7 showcased the situation both before and after the Hub development. This is consistent with the outcome of the study conducted by Chen (2019).

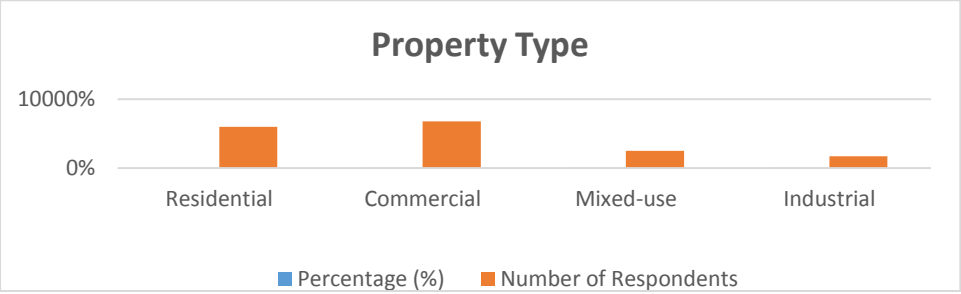
Fig 7: Property value metric



Land Use Changes

One of the most visible aspects of urban transformation in Yaba is the change in land use patterns. The rise of technology firms and startups has led to the repurposing of existing structures and the development of new commercial spaces. According to the data collected, approximately 75% of respondents noted a shift from residential to commercial land use, with many former residential buildings being converted into office spaces, co-working hubs, and tech incubators. This transformation has not only altered the physical landscape but has also impacted the availability of housing, implying inverted U-shaped relationship as noted by Habibu & Ahmed (2023). As commercial developments increase, the supply of affordable housing has diminished, leading to rising property values and rents (see fig 8). The survey indicated that 65% of long-term residents expressed concerns about housing affordability, highlighting the need for policies that balance commercial growth with residential needs.

Fig 8: Property Type



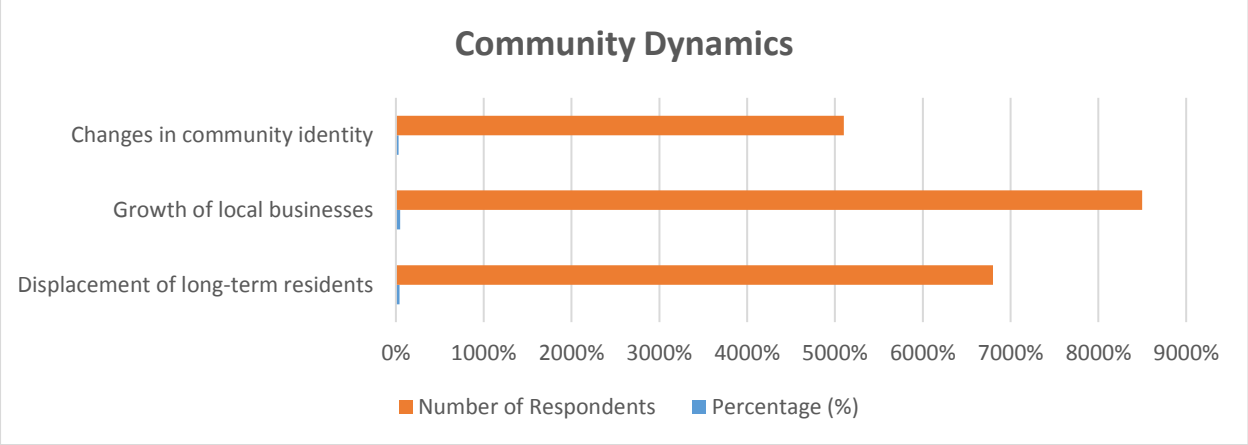
Infrastructure Development

The spatial dynamics of urban transformation in Yaba are closely linked to infrastructure development. The growth of the technology sector has necessitated improvements in transportation, utilities, and digital connectivity. Survey respondents reported that 70% have experienced enhanced public transport options and better road networks, facilitating access to employment and services (see table 2).The establishment of tech hubs and innovation districts has also led to the development of modern office spaces and amenities that cater for the needs of tech professionals. This infrastructure development has not only improved the quality of life for residents but has also attracted further investment, reinforcing Yaba's position as a central node in Lagos's urban economy. One of the interviewed respondents has this to say *"The infrastructure in Yaba is improving rapidly, and the access to resources like co-working spaces and tech incubators made it an easy choice for me."*

Gentrification and Social Displacement

While the transformation of Yaba has brought about economic growth and infrastructure improvement, it has also raised concern about gentrification and social displacement. The influx of wealthier tech professionals has driven up property values, leading to the displacement of long-term, lower-income residents. The survey indicated that 60% of respondents reported experiencing rising rents and property prices, with many expressing fears of being forced out of their homes. This actually confirmed and buttressed the earlier assertion of Shaw & Hagemans (2015). This process of gentrification is exacerbated by weak regulatory frameworks that fail to protect vulnerable populations from the pressures of urban transformation. As property values continue to rise, it is essential for policymakers to implement strategies that promote inclusive growth and safeguard the interests of all residents.

Fig 9: Community Dynamics



Mechanisms Driving Urban Transformation in Yaba

The urban transformation of Yaba into a prominent technology hub is not a spontaneous occurrence; rather, it is the result of various interrelated mechanisms that drive change within the socio-economic and spatial landscape of the area. This objective aims to identify and analyze these mechanisms, focusing on the factors that have facilitated the growth of the technology sector and the subsequent urban transformation.

Economic Opportunities

One of the primary mechanisms driving urban transformation in Yaba is the creation of economic opportunities associated with the technology sector. The establishment of tech companies and startups has generated a significant number of jobs, attracting a diverse workforce to the area. According to survey data, approximately 55% of respondents identified economic opportunities as the most significant driver of urban transformation. This influx of employment has not only benefited young professionals and tech entrepreneurs but has also stimulated local businesses that cater to the needs of this new demographic. The presence of technology firms has led to increased demand for various services, including housing, retail, and hospitality. As a result, local businesses have experienced growth, with 65% of business owners reporting positive impacts on their operations due to the increased foot traffic and consumer spending brought about by the tech hub. This economic dynamism has contributed to a revitalization of the local economy, fostering a sense of optimism and potential among residents. The findings support Bridges (2020) that reported that the tech hubs play a crucial role in improving the standard of living and attracting investment.

Infrastructure Improvements

Infrastructure improvements represent another critical mechanism driving urban transformation in Yaba. The growth of the technology sector has necessitated enhancements in transportation, utilities, and digital connectivity. Survey respondents indicated that 60% have observed significant improvements in road networks, public transport options, and internet connectivity since the emergence of the tech hub. These enhancements have not only facilitated easier access to employment opportunities but have also improved the overall quality of life for residents. The local government and private stakeholders have invested in upgrading infrastructure to support the burgeoning tech ecosystem. This includes the development of co-working spaces, innovation hubs, and tech incubators, which have become focal points for collaboration and entrepreneurship. The improved infrastructure has attracted further investment, creating a positive feedback loop that continues to drive urban transformation.

Perceptions of Change

The perceptions of residents regarding the changes occurring in Yaba also play a significant role in driving urban transformation. The survey revealed that 70% of respondents view the tech sector positively, citing increased job opportunities and economic growth as key benefits. This favorable perception has fostered a sense of community pride and engagement, encouraging residents to participate in local initiatives and support the tech ecosystem, and this agrees with the report of GSMA (2019) and Cohen (2019).It also conformed to Kshetri (2017) that noted tech hubs foster collaboration and entrepreneurship. However, it is crucial to acknowledge that perceptions are not universally positive. Some residents express concerns about the rapid changes and the potential loss of community identity. The juxtaposition of long-term residents and new arrivals has created a complex social dynamic, where feelings of alienation and displacement coexist with excitement about economic opportunities.

Understanding these perceptions is vital for stakeholders to navigate the challenges of urban transformation effectively.

CONCLUSION AND POLICY RECOMMENDATIONS

This study investigated the transformation of Yaba into a technology hub and its impact on urban development, property values, local businesses, and socio-economic conditions. The research revealed that the growth of Yaba as a tech hub has significantly improved urban infrastructure, particularly in core areas around tech clusters. Road networks have been upgraded, electricity supply has become more stable, and internet connectivity has improved. However, these benefits are unevenly distributed, with peripheral neighborhoods still facing infrastructural deficiencies. This disparity highlights the need for more inclusive urban planning. This agrees with the previous study of Agunbiade & Oyedele (2019) that affirmed that Tech Hubs have played a significant role in urban regeneration by improving infrastructure. The study also revealed that property values in Yaba have seen a substantial increase, closely correlated with the proximity to tech hubs. This appreciation has led to gentrification, as long-term residents are increasingly priced out of the area. Real estate developers view Yaba as a lucrative market, further driving up property prices and changing the socio-economic fabric of the community. This result validates the claim in an earlier study by Ojo & Adeniyi (2019) that reported the fact that tech hubs promote sustainable urban development in Nigeria. It is discovered that the emergence of Yaba as a tech hub has fostered a thriving local business ecosystem, particularly benefiting service-oriented sectors such as cafes, coworking spaces, and tech repair shops. This affirmed the study by Akinyemi & Adegboyega (2018) that reported that tech hubs have positive impact on urban economic growth in Nigeria. However, traditional businesses, including local markets and non-tech enterprises, have struggled to adapt to the new economic landscape, often experiencing reduced patronage and revenue. Based on these findings, the following recommendations are proposed to ensure that the growth of Yaba as a tech hub is sustainable and inclusive: Efforts should be made to extend infrastructural improvements to peripheral neighborhoods. The government and private sector must collaborate to ensure that road networks, electricity, and internet connectivity are uniformly enhanced across Yaba, preventing the creation of underserved areas. Urban planning policies should address the challenges of gentrification and displacement by promoting the development of affordable housing and supporting the preservation of existing communities. Zoning regulations should balance the needs of tech-driven growth with those of traditional businesses and long-term residents. It is equally recommended that programs aimed at up skilling the local population should be implemented, with a focus on providing training in tech-related fields, and as advised by Eretan, Atoyebi and Sodiq (2023), government should raise investment in technological innovation so as to improve the quality of institutional environment to achieve sustainable development. Initiatives to support non-tech businesses, such as grants and business development services, should be introduced to help them adapt and thrive in the new economic environment.

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