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Vacancy in buildings in growing cities: the case of Dar es Salaam Central Business District, Tanzania

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Abstract

This study aims to explore vacancies in buildings in the urban context and recommend measures to minimize them. Mixed methods for data collection were used to gather information from a purposively sampled set of buildings with natural vacancies within the Central Business District (CBD). Results showed that there were strong links between the increased rates of vacancy and factors such as age, ownership status, and legal and regulatory issues. The study suggests that building owners should employ more conducive policies, architects should focus on different strategies to future proof new building designs, and all stakeholders should give more consideration to adaptive reuse as a strategy for dealing with vacancies.

Keywords: Growing Cities; Vacancy in Buildings; Utilization; Underutilization; Adaptive Reuse; Historical Cities; CBD

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1. Introduction

Dar es Salaam is among the fastest-growing cities on the African continent (Rosen, 2019). For a long time in its history, the city center of Dar es Salaam has been the heart of economic growth and administration of the city and country at large. However, rapid development has caused enormous pressure on the land, increasing land values, and inducing apparent forms of transformation over a relatively short period. Nonetheless, recent reports state that "the general office market remains subdued with rental rates and property values recording a decline over the past years" (Knight Frank, 2019). This has been accompanied by an increase in vacancy rates in buildings in the Central Business District (CBD) of Dar es Salaam, as was stated in 'The Citizen newspaper in 2018. The larger stock of well-known underutilized buildings and the protracted trend of demolition and new build often preceded by a vacancy in buildings also suggests the presence of a multitude of underlying factors.

As various issues concerning gross vacancies in urban buildings are already prominent in many developed countries over a long period, many studies have been conducted to address the matter. They include the extensive studies by (Remoy and Wilkinson, 2012) and (Zutphen et al, 2015) that focused on the problem of vacancy in office building spaces and their possible solutions in the Netherlands. The results of these studies suggested, "Multiple feasible solutions to the empty spaces be undertaken as per the current scenario" (Zutphen et al, 2015). In addition, Kincaid (2002) expounds on the various options that can be used when dealing with a vacancy in buildings, and stakeholders that are involved in decision making, suggesting that vacancy calls for an inclusive process to address a wider range of concerns. However, these studies focus on the general issue and devise strategies towards dealing with the problem based on a Eurocentric approach.

The problem of increased vacancy in buildings has only recently become a problem in the major cities of developing countries such as Dar es Salaam, Tanzania, and is evidently on the rise (Knight Frank, 2019). Consequently, fewer studies have explored the intrinsic nature and extent of the problem in such contexts, and fewer still address the potential for reuse of the existing building stock to cater to the ever-changing needs of society. A relevant study on the infant real-estate market in Dar es Salaam (Nyanda, 2015) focused on the decision-making environment concerning commercial property and suggested that "high return expectation is the most important driving factor to non-institutional investors".

Following the clearly identified recent drop in demand stated in the 2013 Global Workplace Trends for office space in the Dar es Salaam CBD (a situation that has presumably been accelerated by recent political and economic reforms and actions), more and more buildings have experienced an increase in vacancy rate, and some have been left completely vacant. There is a scarce body of literature about the dynamics of the sustainable use of buildings that reduces the existence of vacancy in buildings. Such knowledge would aid in the development of strategies to mitigate the rate of increase in vacancy and inform new building designs in anticipation of the inevitable change of human needs.

Vacancy in buildings is commonly considered a nuisance to the general public, because unoccupied space often harbors criminal activities and therefore becomes a hazard for public safety. The sheer existence of vacant buildings in prime areas such as the CBD is a threat to the local economy because "a building with vacancy does not only depreciate its value but also devalues the nearby properties and leads to blight in the surrounding neighborhood" (Anagal and Natu, 2020). Although not yet at the peak of its manifestation, such a problem can adversely affect the city in different aspects (e.g., environmentally, economically, and socially, etc.). There are hypotheses stated in newspapers about the different reasons that may have led to the vacancy

of different buildings in the CBD, but researchers have not yet established why there is an increase in the number of vacancies in buildings in this particular area. The purpose of this study is to explore vacancy in buildings, to acquire a better understanding of the causes for its increase, and to recommend measures that can be used to minimize it.

By simple dictionary definition, in the Merriam-Webster states that 'vacancy' means emptiness or unoccupied while 'abandoned' means surrendered or deserted. As for the case of vacancy in buildings, which was the primary concern of this study, different scholars have generally used three different ways of defining the term based on the various aspects of vacancy in buildings. The insurance service office in Switzerland, 2009 defined vacancy through occupancy percentage and period of vacancy; the National Vacancy property Campaign (2005), defined it through its physical state and nature of use as well as the owner's engagement level with the building, and finally a third definition arises through the basis of their state of performance and services (Remoy and Wilkinson, 2012)

Although there are limited ways to classify and categorize vacancy in buildings, (Muldoon-Smith et al., 2017) identified natural vacancy and structural vacancy as the two binary distinctions as follows: "Natural vacancy is broadly taken to mean those properties that efficiently clear respective property markets while structural vacancy means those properties that no longer have a relationship with occupier demand in their present use" (ibid). On the other hand, (Remoy and Koppels, 2009) identified structural vacancy through the duration of the period of vacancy, stating that a building has structural vacancy when there is non-occupancy of the same space for 3 or more years without prospects of the future tenancy. The two approaches to defining structural vacancy are somewhat in line because such buildings indeed stay with a vacancy for longer periods due to a lack of competence in their respective markets. Buildings with natural vacancy are generally still relatively competent and relevant to their respective markets but incur lower rates of occupancy due to other factors.

The sections that follow explain the details of this study, starting with materials and methods, which outline the conceptual framework and methodology used to conduct the study. The results and discussion elaborate on the findings of the study; and finally, the conclusion and recommendations generated from the study summarize and conclude this paper.

2. Materials and methods

2.1. Conceptual framework

The conceptual framework for this study, as illustrated in Figure 1, was constructed using relevant theoretical insights from the literature related to the subject matter. Such studies included those which examined vacancy in buildings due to interest in the concept of obsolescence and depreciation in buildings (Carmona, 2003; Baum, 1993; Remoy, 2010); British Council for offices, 2017 migrating office obsolescence) leading to a wide variety of implications outlined in the bottom section of the framework. Subsequently, five main building obsolescence factors were identified and discussed as the main research variables for this study. They were then tallied with the three factors that cause vacancy in buildings by (Remoy, 2010), who theorizes that such factors include the market for the intended use of the building, the location of the building, and the building itself. These factors make up the conceptual component of the framework.

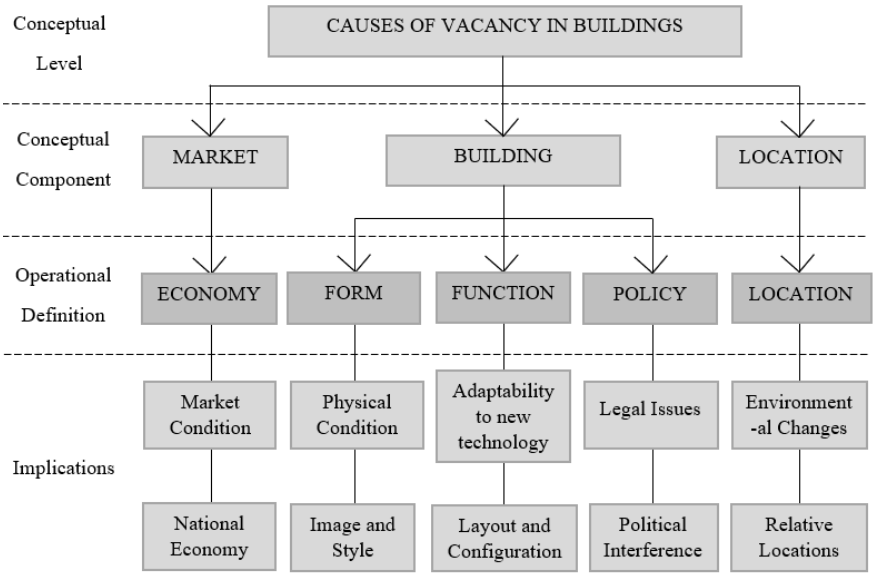

Figure 1. Conceptual framework (Source: Author, 2021. Modified from Remoy, 2010)

2.2. Methods

This study was conducted through a case study strategy and a selection of qualitative methods. This strategy was preferred due to the fact that it allows for the 'investigation of a contemporary phenomenon within a real-life context'. Initially, and due to the nature of the study, a pilot study (further explained bellow) was conducted (Yin, 2011), covering a large part of the city center, scoping through the areas with vacant buildings. It was then possible to identify the areas where there were more vacancies in buildings than other areas. These areas were identified for in-depth investigation by categorizing buildings according to the nature of its vacancy. By borrowing a leaf from the literature, the nature of the above buildings was divided into two groups, namely, i) structural vacancy, and ii) natural vacancy. The vast majority of vacancies in buildings in the CBD fall into the latter category of natural vacancy, hence the context of this research was based on it.

A wider net was cast on the earmarked area to expose a richer collection of buildings from which one can gain a better understanding of different variables to be discussed concerning the issues. To achieve this, a typical case purposive sampling strategy was used. Purposive sampling refers to "a series of strategic choices about with whom, where and how one does one's research." (Palys 2008). Other case sampling strategies include extreme case (e.g., buildings with structural vacancy) and paradigmatic cases (e.g., buildings whose vacancy situation has been strategically delt with). However, typical case sampling represents cases that are not unusual in any way with relation to the phenomenon of interest (Andrew and Pitt, 2008). These are buildings with relatively normal vacancy rates/trends. Such cases help to increase the sample space and in so doing, they test some of the variables against each other concerning extreme situations. This implies that the sample space includes buildings with moderate occupancy rates but also display different traits that can help to expand the horizon of discussion. The sample included the Holland House, IPS Building, NIC Investment

House, HOSCO Building, and Ministry of (M.O.) Foreign Affairs, M.O. Home Affairs, NBS Building, PSPF twin towers, and Golden Jubilee Towers.

This sample was narrowed down using the criteria of age, ownership, and nature of use (Table 1). These criteria were derived from the pilot study (Hassan et al., 2006), which established that there was a higher concentration of residential (mixed-use) buildings in most parts of Kisutu and some parts of Mchafukoge Wards, which were also densely populated and vibrant throughout the day and night, indicating that most of the buildings in these areas were occupied due to the high demand of affordable housing; and therefore, located in the least favorable areas for the current study. On the other hand, a larger concentration of institutional, office, and commercial buildings was found in the Kivukoni Ward and the Eastern part of Mchafukoge Ward. This area also contained many older buildings amidst new ones, some of which had vacancies or were abandoned for a long time and had started to show signs of deterioration. All this information was gathered through observation and a series of guided interviews with various respective stakeholders. Therefore, for typical cases (natural vacancy), buildings were selected with the following factors in mind: age, i.e., built before and after independence; ownership, including government-owned and private-owned; and nature of use, including residential, non-residential, and mixed-use. Table 1 shows the selection criteria of the buildings.

Table 1.: Selection criteria from typical case sampling

Age	Before Independence	①, ②, ⑧
	After Independence	③, ④, ⑤, ⑥, ⑦, ⑨
Ownership	Government Owned	①, ②, ④, ⑥, ⑤, ⑦, ⑧
	Private owned	③, ⑨
Nature of use	Residential	⑥, ③
	Non-residential	①, ②, ④, ⑤, ⑥, ⑦, ⑧
	Mixed Use.	③, ⑥
LEGEND: ①-**IPS Building**; ②-**HOSCO Building**; ③-**PSSSF Twin towers**; ④-Holland House; ⑤-Ministry of (M.O.) Foreign Affairs ; ⑥-NIC Investment House ; ⑦- M.O. Home Affairs; ⑧-NBS building; ⑨-Golden Jubilee Towers		

The IPS building was selected to represent buildings that are government-owned and used for nonresidential purposes; PSSSF twin towers were selected to represent mixed-use buildings, newly built and privately owned; HOSCO building represents older, government-owned office buildings (built before

independence). The buildings were studied using mixed methods of data collection, such as observation, guided interviews, and focused group discussions. Each of these methods was used exhaustively depending on case-by-case level and the level of information was available during the time of inquiry. The building level was the main unit of analysis and such buildings included those that are currently with vacancy or are underutilized. Focusing on the physical attributes of buildings such as the site and location, spatial qualities, fabric and structure, the study also considered concerns of the 6 identified key stakeholders (Kincaid, 2002) which are the building owners or their representatives (property manages) and users, as well as the regulators and producers, who take part in the decision-making process concerning vacancy in buildings. Information from such parties was acquired through guided interviews and/or report reviews depending on the nature of each case.

2.2.1. The IPS Building

Built-in the early 1960s, this building is currently jointly owned by NHC and PSSSF under a private company named Housing and Pension Company Limited. The building is located at the epicenter of the CBD, near the Askari Monument (Figure 2 A) and was the tallest and most modern building of its time (Sykes and Waide, 1997). It contains a total of 1015.14 m2 of retail rental space on the ground floor level, which is currently priced at 32,600 Tsh/m2, and 5093.23 m2 of office rental space in the tower (11 stories) structure, priced at 26,048 Tsh/m2. The building is currently (as of June 2021) operating at an average 67% occupancy rate: 95% in the ground floor retail space and 54.19% in the office space.

Figure 2. A - The IPS building, B - PSSSF Twin Towers, and C - the HOSCO building (Source: Author, 2021)

2.2.2. PSSSF Twin Towers

This is a high-rise commercial residential building, iconic in its design, and filled with modern equipment and supporting facilities. The 31-story structure, which officially opened in 2015, is currently the second tallest in the CBD and third tallest in Dar es Salaam as stated by the Council on Tall Buildings and Urban Habitat, Dar es salaam, Tanzania in 2021 (Figure 2 B). Block A (left-hand side) contains a total of 88 residential apartments from the third to the 24th floor and office space on the top 10 floors. Block B (right-hand side) contains only

offices from the ground floor to the top floor. The building is privately owned by the Public Services Social Security Fund (PSSSF) and managed by the global real estate consultant, Knight Frank. The total rentable office space within the office tower (block B) building is 21,754.69 m2 and in the residential tower (block A) is 4501.12 m2. Supporting facilities include a basement car parking space (182 cars), a restaurant on the second floor of block B, and a service floor on the 25th level of both towers.

2.2.3. HOSCO Building

Also known as Gunter House, this building was built before independence in the early 1900s (Edens, 2019). It is located at the corner of Samora Avenue and Mosque Street (Figure 2 C). The building is currently composed of two structures that are connected by a narrow mid-section. One side of the building faces Samora Avenue while the other faces India Street. The two-and-a-half-story structure facing Samora Avenue was built first and meant to be used for both commercial and family residences. After independence, it was privatized by the government. During that time, it housed a government entity called Household Supplies Company (HOSCO) that sold office and household supplies and equipment to government offices. The other part of the building was built at a later stage and used for commercial purposes on the ground floor and offices on the upper floors. However, there was a legal dispute over its ownership between the government and individuals who had bought the company. In 2008, the case was opened and went on until the end of 2014. The government won the case and evicted all the occupants in 2015, only to start reoccupying it at the end of 2019.

3. Results and discussion

3.1. Trends of vacancy in the selected buildings

3.1.1. Case of the IPS Building

Empirical data sought through numerous guided interviews with property manager and building users showed that the IPS building has performed relatively well throughout its useful life up until more recent years, where it hit occupancy rates as low as 57% in 2019, as part of a gradual decrease over the past 10 years (Figure 3). The ground floor retail space has always had high occupancy (during the time the building was in use) for there is high and consistent demand for retail space in such a location. However, the increase in vacancy experienced is due to a decrease in the demand for office space because of a change in the office market conditions. The building was able to maintain very high occupancy (100%–95%) in the years 2010–2013 due to the presence of tenants who were able to rent entire floors or more. Such types of tenants included companies such as Phoenix (647 m^2—one and a half floor) and the Tanzania Tourist Board (468 m^2—a whole office floor), [part a in Figure 3]. However, some tenants started to leave in 2014 (TLS—125 m^2) and more left in 2015 and 2016 (Phoenix and the Tanzania Tourist Board) after the new government began to enforce tough tax laws and license restrictions for import and export, etc., which led to tough economic conditions, hence the relocation of some offices and the complete closure of others, [part b in Figure 3]. There was yet another steep decline in 2018 when government offices were moved to Dodoma. This led to the closure of offices whose main customers were government departments. Such offices include Ben and Company—210 m^2, Yellow Pages—175 m^2 and IPS—136 m^2, [part c in Figure 3]. However, there has been a slight increase in occupancy from the

end of the year 2020 to the beginning of 2021, which shows the possibility of regaining the status of good performance, [part d in Figure 3].

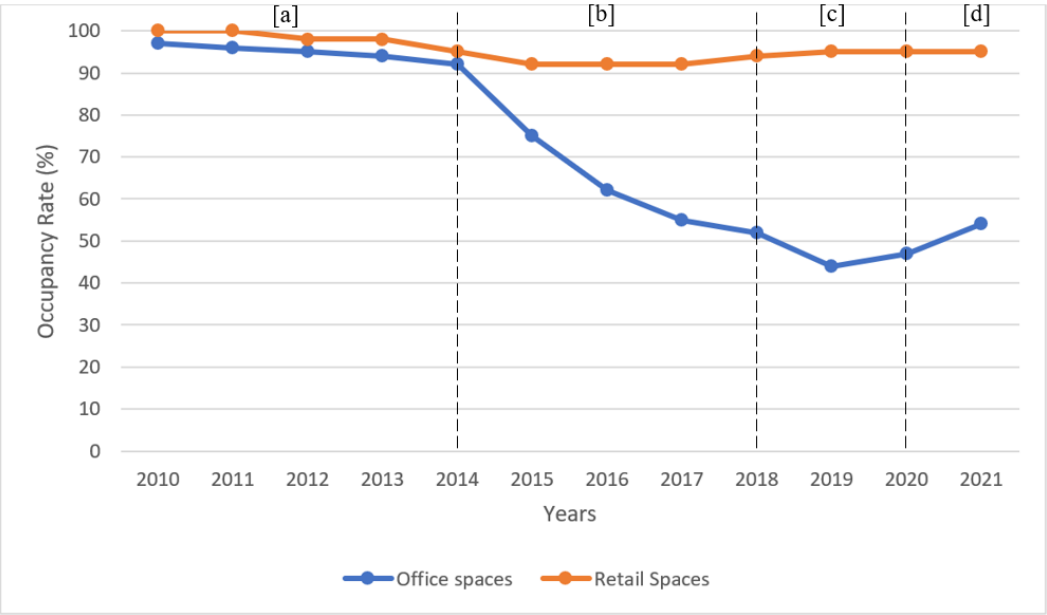

Figure 3. IPS building's annual occupancy rates from 2010–2021 (Source: Constructed from Proper Consult annual report records)

3.1.2. Case of the PSSSF Twin Towers

From when it was officially opened (in 2015), this building has displayed quite contrasting trends between the residential and office block (Figure 4). Block A (residential tower) steadily gained occupancy up to 80% despite its relatively high rent. The property manager explained that 74 of 88 apartments were rented because of the high demand and the presence of tenants who tend to take many apartments (up to 40). As for the office space, only 22% of the total area in Block A has been occupied. The entire Block B (office tower) has never been occupied (i.e., 0% occupancy). The property manager explained that their strategy was not to rent out office space in block B until a permanent solution for the constraining building layout is found. Initially, this building was designed for the type of tenants who would occupy a whole floor, such as the Tanzania Revenue Authority (TRA), who were already in the process of signing an agreement. This plan was, however, interrupted by the new government regime in 2015, which discouraged renting space from private properties. Since then, the building owners have only attracted potential tenants who request smaller areas, hence the need for rigorous partitioning, a demand that has so far proven to be very difficult to fulfill due to limited design flexibility in the building.

The results of this account show several factors; one is that there is a much higher demand for residential space in this area in comparison to office space. Second, vacancy in the buildings was initially mainly caused by a change in the anticipated nature of the demand for office space and then followed by the inability to quickly adapt due to the inflexibility of the building layout.

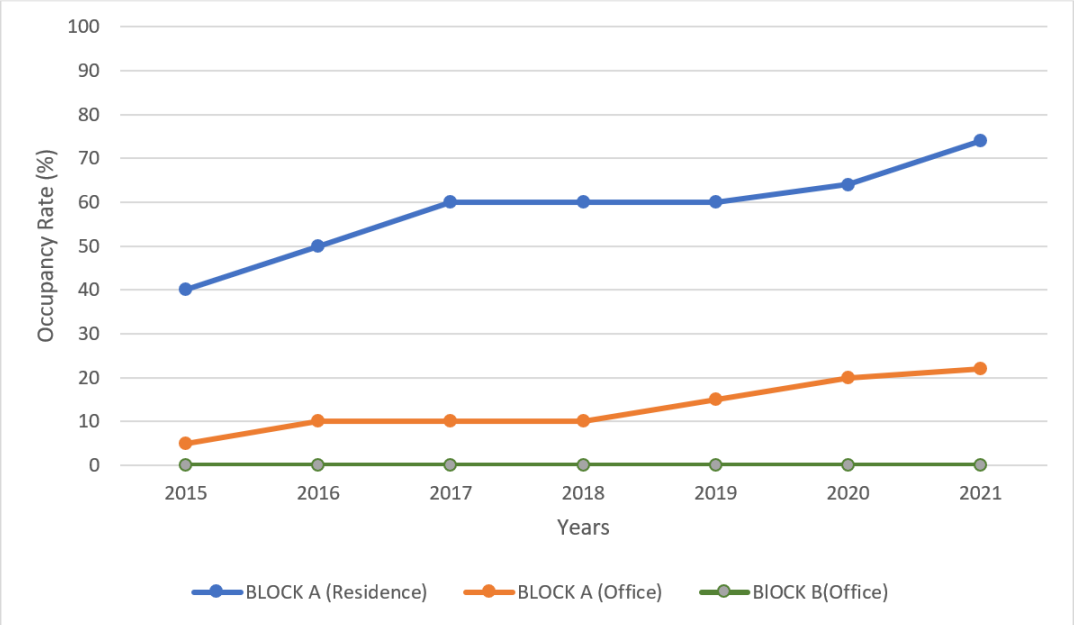

Figure 4. PSSSF twin towers' annual occupancy rates from 2015–2021 (Source: Constructed from Knight Frank annual report records)

3.1.3. Case of the HOSCO Building

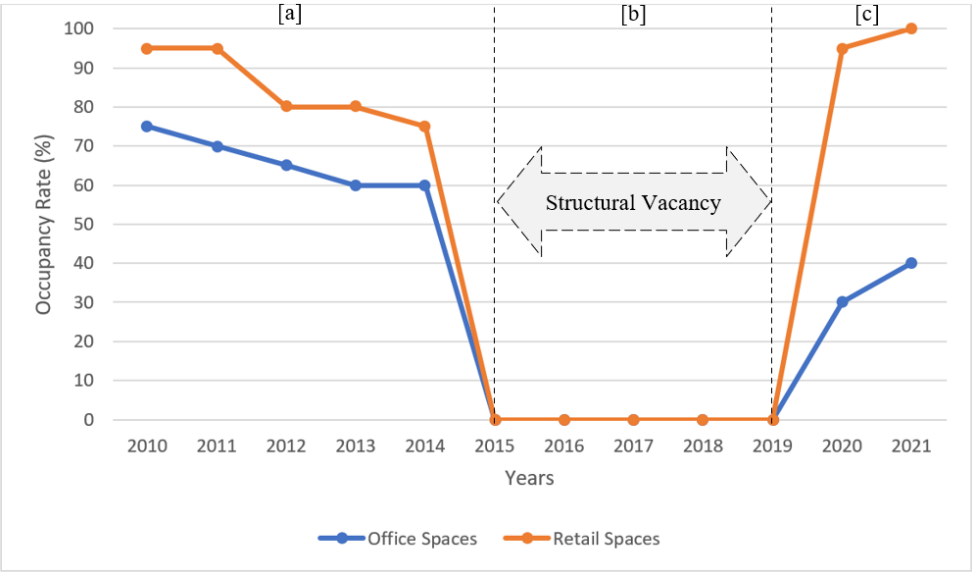

Figure 5. HOSCO building's annual occupancy rates from 2010–2021 (Source: Constructed from Proper Consult annual report records)

Graphically presented in Figure 5, the building gradually lost its occupants during the time of its court case (which took 6 years) and was poorly maintained throughout the time, [part a in Figure 5]. When the case was closed, it was handed over to Tanzania Building Agency (TBA) who evicted all occupants and left it vacant from 2015 to 2019, [part b in Figure 5]. In 2020, the building was officially reopened, and the ground floor was immediately renovated and occupied by a restaurant and shops, [part c in Figure 5].

The cost of renovation was covered by the respective tenants as this was part of the agreement with TBA. This brought the occupancy on the ground floor to 100% by 2021. The office space on the upper floors was also to be rented under the same agreement but this proved to be a greater challenge due to the severe deterioration. As a result, the occupancy rate has risen to about 40%; the occupants are mostly small private companies that are involved with clearing and forwarding, a stationery shop, and cleaning services.

3.2. Causes of vacancy in buildings due to the building itself

The assessment of the causes of vacancy in buildings due to the building itself was conducted through the three main variables, which are the building's form, its function, and the policies that are related to the owner or its nature of use. Figure 6 graphically illustrates how these variables comparably relate to each other concerning the buildings that were studied by rating them on a scale of 0 to 5, where 0 is non-existent, 1 is the lowest score, and 5 is the highest.

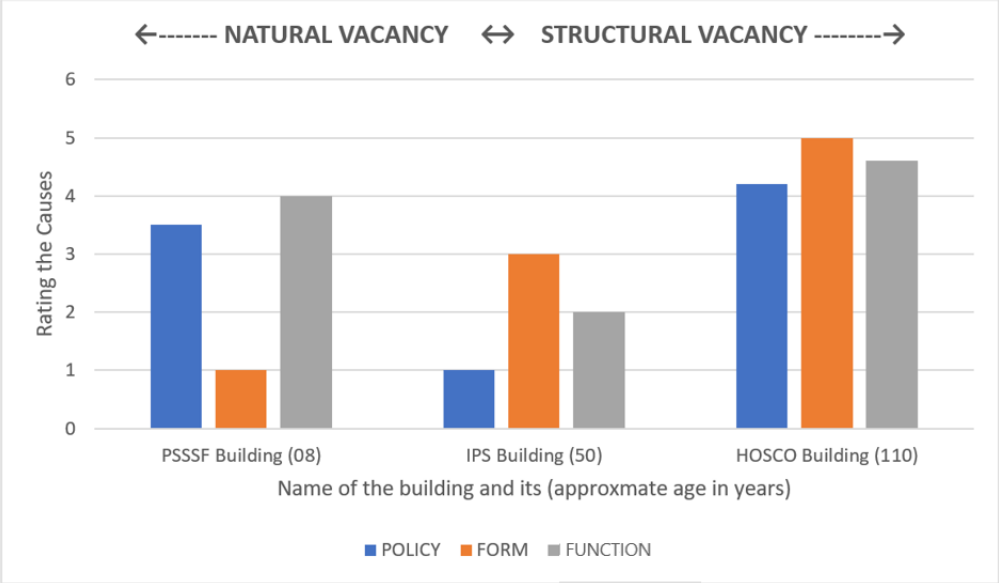

Figure 6. Vacancy due to the building itself (Source: Author, 2021)

3.2.1. Building form

Concerning the vacancy in buildings, the building's form has been discussed in two main aspects, which are physical deterioration and the building's style and aesthetics. From a 3 weeks long thorough field study (i.e., through observation and interviews), it was apparent that the physical deterioration of a building or its

structural condition as a cause of its vacancy is strongly related to the building's age. This was because older buildings such as the HOSCO tend to show more indicators of physical deterioration (Figure 7 C) as compared to new ones, such as the PSSSF twin towers (Figure 7 B) and IPS building (Figure 7 A). Moreover, the HOSCO building's deterioration was accelerated by poor maintenance and upkeep during the time the building was left structurally vacant due to unsettled legal matters.

Figure 7. Interiors of the buildings; [A]- Unoccupied office space in the IPS building, [B]- Contemporary interiors of the entrance lobby into PSSSF twin towers office building, and [C]- Deteriorating roof and interior spaces in the HOSCO building (Source: Author, 2021)

In terms of the style, different property managers said that prospective clients are generally less likely to rent space in older buildings as compared to the new, modern ones, due to the outdated appearance of the old buildings and lack of modern supporting facilities such as elevators and security equipment. Real estate agents also readily went on to explain that some clients would especially comment on very specific issues such as types of floor finishes, ceiling heights, and types of the ceiling, as well as the general appearance of the building. This is in line with (Remoy, 2009 and Carmona, 2003) who vividly express the impact of physical deterioration of the building and its style and aesthetic to its commercial performance. However, Baum (1993) also acknowledged that, "configuration and internal specification are seen to be more important in this respect than depreciation factors".

3.2.2. Building function

With a vacancy in building, building function has been discussed in the aspects of, adaptability to technological advancements and building's functional layout. In line with Baum, (1993) and British Council for offices (2017) migrating office obsolescence, during discussions with property managers and producers such as architects, it was established that older buildings generally tend to fare poorly in this respect when subjected to technological changes. Consequently, older ones such as the HOSCO building were seen to be the most

cumbersome when trying to install new equipment and standards (Figure 8), due to general design considerations that simply never took modern technological means into account.

Figure 8. Old and poor electrical service system in the HOSCO building; Left: Exposed, spaghetti electrical wiring systems; Right: Old main switch/control panel (Source: Author, 2021)

The flexibility of a building's functional layout can also considerably influence its performance in dynamic market environments such as the Dar es Salaam office market. As expressed by Baum (1993), buildings with relatively rigid functional layouts such as the office space in the PSSSF twin towers (Figure 9) tend to pose challenging situations when subdividing and partitioning, while those that are more easily adaptable, such as the IPS building, tend to fair considerably better in such situations, allowing for different types of layouts (Figure 10) that can accommodate a wider range of special requirements.

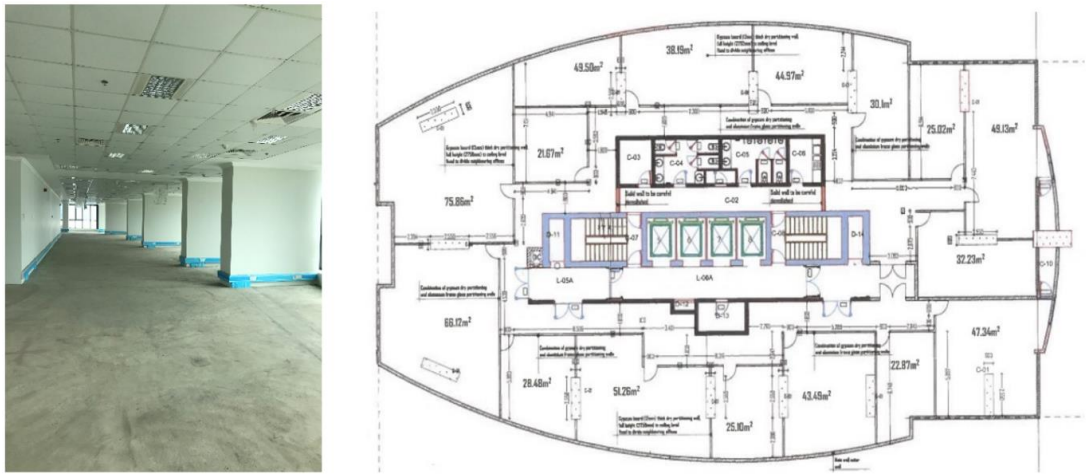

Figure 9. Functional layout of the PSSSF twin towers; Left: Interior image of an unoccupied office space; Right: Office floor layout plan showing first attempt to subdivision of office space for rent. (Source: Author, 2021)

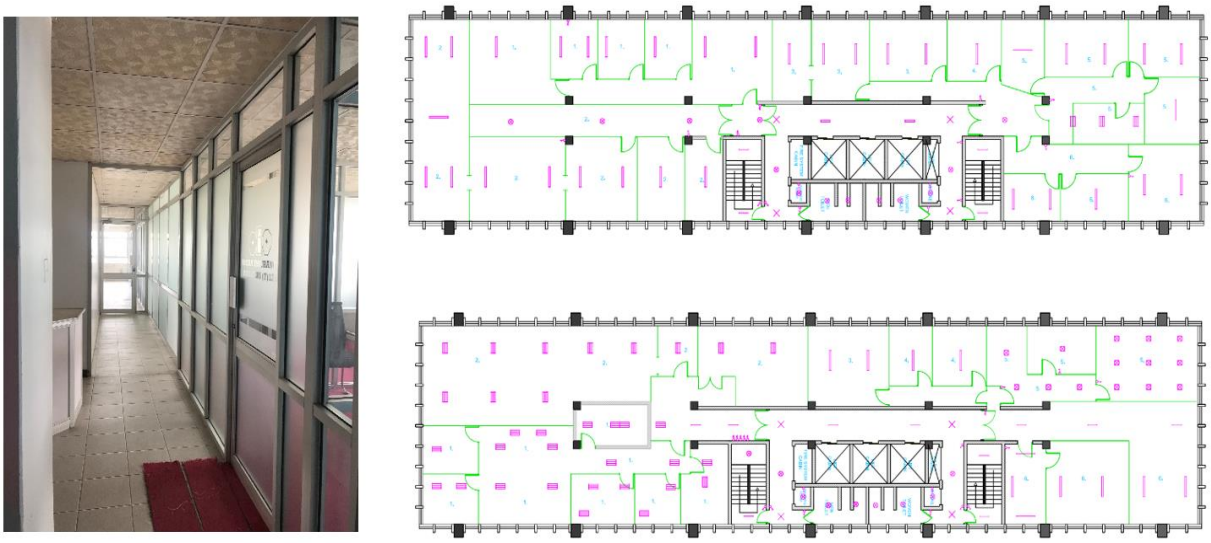

Figure 10. Functional layout of the IPS building; Left: Interior image of an occupied office space; Right: Different office layouts showing the building's allowance for flexibility in office partitioning (Source: Author, 2021)

3.2.3. Policy

Legal issues concerning the building itself, or unlawful acts related to the nature of use or owners' means of conduct, commonly cause long and protracted high-profile court cases that lead to structural vacancy. An example of this is the HOSCO building, which was completely closed off for five (5) years until all legal issues were resolved. At this juncture, it is important to point out that such buildings go through a great deal of strain; losing their value in a structural state as they slowly deteriorate physically and in style as they become outdated. Typically, this can be seen as a function (fx) of the amount of time it was left vacant. This in line with building-related issues outlined by Remoy (2010), and ownership- and lease-related issues.

Policies regarding the building's use and management were seen to have a stronger relation to the behavior of the building's ownership, whereas in this case, buildings would differ in that they are either privately owned (i.e., by an individual or private entity) or owned by the government. Some of the variables that affect a building's occupancy due to its owner, which were brought up during a focus group discussion (of 6 individuals; 3 property managers, 2 regulators and the researcher), included building maintenance, the decision-making process, owner's policies, and tolerance to prolonged periods of vacancy.

3.2.4. Concluding discussion about causes of vacancy in buildings due to the building itself

To summarize, as for the building itself, the study indicated that there were strong links between the rate of vacancy and various factors which relate to the age of the building, its state of ownership, and its legal and regulatory issues, none of which are mutually exclusive (Figure 11). Nonetheless, each of these factors affects how a building is utilized (i.e., in manner and duration). The following is a diagrammatic representation of how they correlate and their subsequent conclusions.

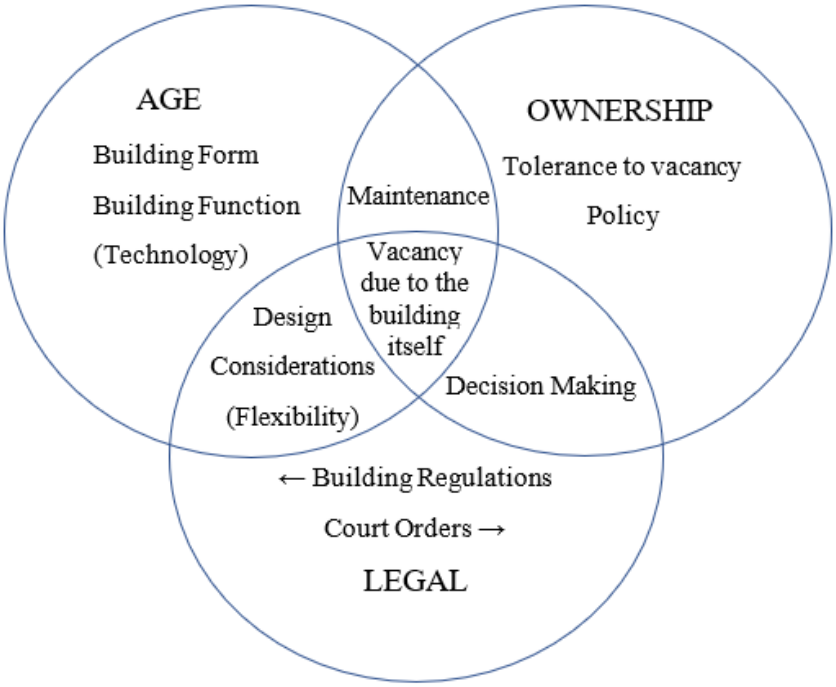

Figure 11. Causes of vacancy due to the building itself (Source: Author, 2021)

Amongst the three (i.e., age, ownership, and legal), legal issues were generally the most detrimental, and subsequently the most common cause of structural vacancy, as was seen in many cases during the field study, including for the HOSCO building. This is mainly due to the onerous nature of property-related legal cases. Other instances of legal causes include hindrances by building regulations to make necessary alterations to old buildings (or protected ones) for reuse. However, this as a possibility also depends on the flexibility and robustness of the building's original design and the willingness of decision-makers and stakeholders to choose a specific strategy.

However, even though the decision-making process involves different stakeholders, it is the building owners who normally have the final say. Their decisions depend on their policies and innate characteristics. In this case, for example, those with higher tolerance to vacancy, such as the government in the case of HOSCO building, take a longer time to make decisions or choose one that can practically leave the building at a vacant state while waiting for a change in the market condition for its use. Contrary to this approach is the use of active strategies to counter the issues that caused the vacancy to retain old tenants and attract new ones. This is reflected in the case of the PSSSF twin towers, where initiatives were taken to partition the larger rentable office spaces to smaller ones, which are currently in higher demand. Either way, throughout its lifetime, buildings will always need to be updated, maintained, and taken care of, and these processes also depend on the owners' approach and policies towards property management.

Nonetheless, maintenance is also greatly interlinked with the age of the building. Older buildings are generally harder and more expensive to maintain, depending on stylistic limitations and the severity of their condition in case of decay and damage. Regarding these factors, the IPS building, being relatively old, can be identified as one that shows exemplary qualities due to the flexibilities offered by its layout configuration. They are also stylistically the least favorite because most users tend to prefer contemporary facades and

appearances, and modern facilities, such as escalators and lifts. Even more unlikely to perform well are those which are already decaying and losing their structural stability. However, it is important to note that new buildings can also be hard to maintain in cases where the design is poorly executed concerning the buildings' maintenance. However, vacancies in buildings are rarely caused by only one exclusive factor but rather a combination of factors that can be dealt with accordingly. This was apparent in most cases where more than one building-related issue was identified as the cause of vacancy in buildings in further unison with other external factors such as its location and market condition of the building's use.

3.3. Cause of vacancy in buildings due to the building location

From the field study, it was seen that the location of a building also has an impact on its state of vacancy at three different levels, which are the location of a building relative to its surrounding neighborhood, the CBD area, and the whole city at large.

At the neighborhood level, concerning the buildings that were studied, issues such as limited car parking space were considered major for the HOSCO building because it was built on a relatively small plot in the high-density area with a footprint that covered the entire plot, leaving no area for car parking. Built-in similar conditions of the design of the PSSSF twin tower attempted to solve this issue by providing a basement car parking space.

Relative to the CBD, it was acknowledged that "good locations" have positively influenced buildings' performance. These include the IPS building, whose location is one of its strongest qualities and has made it very popular. It is located near the Askari Monument and along the Azikiwe Street, which is one of the transit corridors for city buses. Although not yet fully exploited, the HOSCO building also bears great potential concerning its location, being the oldest one in the area (recognizable) and located at the corner, where some of the most popular streets meet.

With the central area of the city, both Upanga and Kariakoo have been densely built up over recent years, mostly filled with institutional, residential, mixed-use, and a few new office building developments, which still compete with those in the CBD. This type of competition is furthermore steepened by the rise of suburban centers such as Victoria, Ubungo, Mbagala, Masaki, and Tegeta. There has also recently been a rising trend of converting residential houses to offices around the same areas. Such new locations have reduced the demand for office space in the CBD.

3.4. Cause of vacancy in buildings due to the market condition of the building use

Changes in the market conditions are typically caused by political reforms and changing policies that affect how buildings are used either through the user's economic situation making them unable to afford rent or affecting the demand for and supply of buildings for a certain use. A good example of such an issue at the building level is the situation in the PSSSF twin towers. The demand for and supply of building for a certain function in the CBD was quite an issue, where the demand for affordable residential space has always been at high levels because most people prefer to live close to their workplaces in town to avoid daily commutes. However, as for office space, there seems to be an oversupply in both government and commercial buildings due to the relocation of government offices to Dodoma as well as the emergence of alternative cheaper

locations. Figure 12 illustrates the differences between the demand for office space and other functions in the IPS and PSSSF buildings from 2015 to 2021.

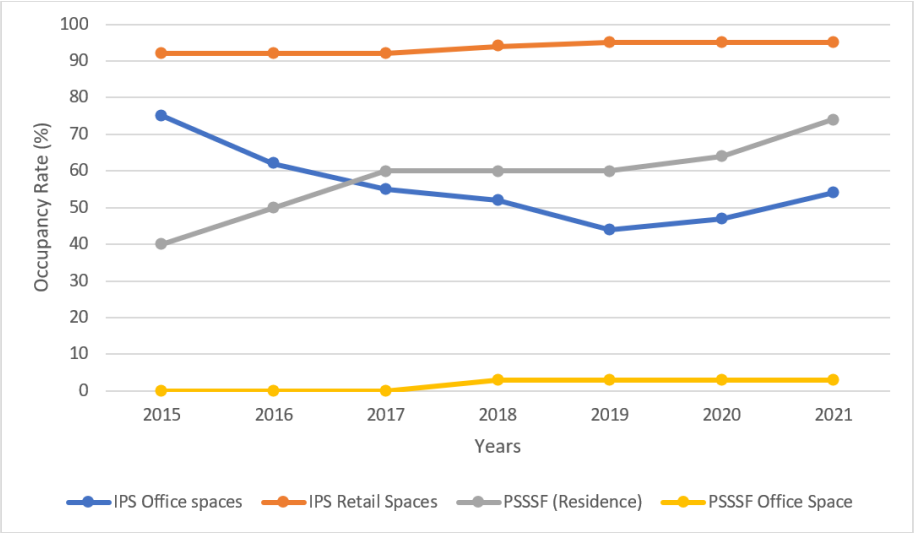

Figure 12. Difference between occupancy rates for office space and other uses (Source: Author, 2021)

The general economic environment was also seen to greatly influence the performance of buildings, where some property managers reported that the changes in trade (import and export) and taxation policies that happened in 2015, and effects of the COVID-19 pandemic, also made companies lose revenue and opt for teleworking and working from home (Noor et al. 2021). This therefore forced some of their larger tenants to reduce the area of their rented space, and in so doing added to the gross vacancy of a building.

4. Concluding remarks

This study was conceived based on curiosity about vacancy in buildings in the Dar es Salaam CBD, and has sought to explore vacancy in buildings, their causes, and implications, and to recommend measures that could be used to minimize it. The findings have demonstrated that older buildings are prone to have higher vacancy rates due to age-related issues, which affect their form and functionality. However, such issues are relatively controllable through countering factors such as good building maintenance and flexible building designs. Furthermore, legal issues and protracted court cases were seen to predominate as causes of a prolonged state of vacancy without the possibility of maintenance or repair (in most cases). This, in turn, led to deterioration and decay of a building structure as if it were abandoned.

Concerning city growth, it was apparent that the creation of new competitive locations often makes older locations less vibrant and relevant, resulting in underutilization and increased vacancy in buildings of the latter. Such a dynamic is evident in the Dar es Salaam office market competition between new locations, such as the Victoria area and Masaki on the one hand, and the CBD on the other. Furthermore, whether enforced by the government or private owners, policies were seen to have a unique type of influence (either positive or

negative) on vacancy in buildings in such a way that they can more confidently determine their fate. An example is the relocation of government offices to Dodoma, which affected market conditions, leaving buildings vacant and others with increased vacancy.

This study confirms that vacancy in buildings in Dar es salaam CBD is indeed caused by three main factors (market, building, and location) Remoy (2010), and exposes how the factors relate to each other. It is also in line with local and global sources, which iterate the onset of a paradigm shift that will increasingly render office space redundant due to technological advancements that create efficient means for teleworking. This process has seemingly been accelerated due to the COVID-19 pandemic resulting in a trend of tenants reportedly surrendering the "newly redundant space", which effectively results in the gross vacant floor area within the building.

4.1. Recommendations

From this study, it is recommended that new building designs should consider future proof design consideration concerning vacancy, such as enforcing measures that enable ease in maintenance of both the exterior and interior of the building as well as the flexibility to accommodate change or reuse. As such, the interiors should be able to provide a conducive environment for occupants throughout their useful life through careful choice of finishing materials that are durable, aesthetically pleasing, and relatively easy to clean. Exteriors should be able to provide a lasting aesthetic appearance through building styles with updatable façade systems that also conceal sensitive areas, such as drainage pipes and ducts, and provide ample service space. In terms of flexibility, the design should be able to allow changes in the layout, when need be, to fit future needs of users or a possible change of use option(s). This is also known as adaptive reuse (Kincaid, 2002) , and refers to the ability to adapt buildings to a fast-changing society.

Building maintenance policies that lead to good building upkeep should also be encouraged to improve building performance, and this is especially so in older buildings. This can be achieved with new and competitive property management strategies that facilitate frequent and extensive maintenance schemes as well as renovations and upgrades that can create a general change of perception towards older buildings. Time-consuming bureaucratic decision-making processes that delay actions to counteract issues that lead to a vacancy should be discouraged. As such, decision-making agents should adopt more efficient decision-making frameworks that allow all stakeholders to participate in the process. This will lead to timely and well-informed decisions that ensure the sustainable utilization of the available building stock and conducive adjustments when needed adapt.

4.2. Limitations of the study and areas for further study

This study focused on exploring vacancy in buildings with the aim of finding strategies to address the issue of increases in vacancy in buildings in different growing cities. However, it was structured to focus on the CBD of Dar es salaam, unpacking issues that generally address vacancy in buildings but more specifically in office spaces. In carrying out this study, some gaps have been identified in different areas, such as, vacancy in buildings more specifically in other cities with difference dynamics of growth, real-estate markets such as the residential and retail; or in other locations within the city other than the CBD; and lastly the impact of vacancy in buildings to the local economy of a place.

Other methodological limitations include restricted access to some buildings during data collection and poor record keeping of occupancy trends in some cases. These led to limited sample space of buildings and difficulty in collecting data from the selected ones respectively.

Authors contributions

Conceptualization, O.S.; methodology, L.M.; investigation, A.M; data curation, A.M.; writing—original draft preparation, A.M.; writing—review and editing, O.S.; visualization, A.M.; supervision, O.S. and L.M. All authors have read and agreed to the published version of the manuscript.

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Institutional review board statement

The study was conducted according to the guidelines of Ardhi University research and publication policy and the ethical review and approval was waived in this study because it mainly involves buildings.

Informed consent statement

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

Data availability statement

The study did not report any data; however, in case there is a need, data can be available by contacting the corresponding author.

Conflicts of interest

The authors declare no conflict of interest.

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