

Assessing the Potential of Adaptive Reuse in South Africa: An Integrative Review using PESTEL Analysis

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Abstract

South Africa is in critical need to structure its future building and construction on the principles of sustainable construction to counteract the negative effects of the building and construction industry on the environment, society, and the economy. Since South Africa became a democratic state in 1994, sustainability has been ingrained in its laws and policies. However, despite the country's adoption of various global frameworks and protocols for environmental preservation, these initiatives have not been fully implemented across all economic sectors. Adaptive reuse (AR) as a concept for sustainable housing development is still in its infancy among South African construction industry professionals. This research examines the contextual factors that affect how AR operations are applied in the building and construction industry, with a focus on the South African private sector. An integrative literature review of a systematic search in the Scopus database, supplemented with a purposive search in Google Scholar was conducted to achieve the PESTEL (political, economic, social, technical, environmental, and legal) analysis. As a result, factors, and variables such as a lack of resources, knowledge, technological know-how, and policies were recognized and contextually described. The government must create relevant enabling legislation, including laws and regulations, tax reductions, and financial and economic incentives for AR initiatives. The data acquired is used as a preliminary step for the design of the necessary tools and models for assisting the private sector in sustainable adaptive reuse initiatives in South Africa.

Keywords

PESTEL analysis, Adaptive reuse, sustainable construction, Potential, Private sector, South Africa

1. Introduction

A shift to sustainable living has become necessary due to the continuous increase in population and the resulting need for infrastructure, which has resulted in the depletion of natural resources and the consequences of climatic pattern changes, global warming, and other apparent negative environmental effect (Abdelfattah, 2020). The construction industry has a significant impact on global resource consumption and since some of these resources are finite and non-renewable, the building sector is directly at odds with the physical environment, which raises the environmental implications of such pressures. As a result, during the past few decades, the phrase "sustainable construction" has become a blanket term for many developers and professionals, with sustainability serving as the foundation for many ideas and conceptions.

The application of sustainable techniques in the building, construction, and functions of an organization requires considering a variety of factors, including social investment, improved efficiency, legal and technical costs, and reduced environmental impacts (Pitt et al., 2009). Lately, South African (SA) governments have emphasized the need for sustainable housing delivery and construction in municipal regulations for individuals and businesses to promote sustainable development. The nation has become more dedicated to achieving sustainable development goals (SDGs) and in addition to participating in international negotiations, it has created a national framework for the transition to a circular economy. As a result, the South African government's implementation of the SDGs within the framework of current regional and national strategic plans, such as the African Union's Agenda 2063 and the nation's own National Development Plan (NDP), emphasizes the necessity of strong partnerships with other organizations (Haywood et al., 2019).

A major category of organizations crucial in this partnership for sustainable development is the private sector property companies (PSPCs) since they play a crucial role in building, construction, and the development of national economies. In South Africa., most investments particularly in the building and construction sector, are made by PSPCs, who make up about 75% of the employed labor force (SA News, 2022). However, due to their limited resources and the cutthroat business climate, applying sustainability concepts among PSPCs poses a significant challenge. Adaptive reuse has received widespread recognition as a key sustainability concept in the building and construction industry and has been used extensively in developed countries (Owojori & Okoro, 2022a). According to Yung and Chan (2012), "adaptive reuse is a new kind of maintainable rebirth of the city, as it covers the building's lifetime and evades destruction waste, encourages recycles of the embodied dynamism and also delivers substantial social and economic profits to the world".

The Republic of South Africa (RSA), which is at the southern tip of Africa, is regarded as a middle-income country with a wealth of natural resources and functioning institutions for the economy, politics, and social development (Du Plessis, 2002). South Africa is a nation with a rich history and a number of abandoned heritage places that can be maximized by preserving and at the same time reused efficiently. Adaptive reuse of historic structures can contribute to the creation of a sustainable and healthy built environment (Owojori and Okoro., 2022b) and a positive catalyzation of housing delivery in South Africa if implemented strategically and effectively. To

address the issue of applying the adaptive reuse concept among PSPCs in the building and construction sector, it is first necessary to conduct a structured analysis of contextual factors that have an impact on the PSPCs' operations.

This article describes an analysis of South Africa's property-providing companies' current context on adaptive reuse, with an emphasis on the private sector. An analysis based on the political, economic, social, technical, environmental, and legal (PESTEL) structure was conducted to accomplish this objective. The acronym for this analysis, which is frequently used by organizations, stands for the political, economic, social, technological, legal, and environmental factors that often impact business organizations. PESTEL analysis is therefore utilized in strategic planning to examine macro-environmental elements that surround organizations (Marinovic-Matović and Arsic, 2020) as illustrated in Figure 1.

The technique is used for strategic analysis in many different fields such as in assessing transport, waste recovery, oil and gas, business, and more (de Sousa et al., 2022; Song et al., 2017; Capobianco et al., 2021). Related to adaptive reuse, Vardopoulos and Theodoropoulou (2020) used PESTEL to assess the importance of adaptive reuse as a suitable response to the urban sustainability agenda in Greece. Therefore, this study utilizes the PESTEL analysis to study the macro-environmental factors impeding adaptive reuse application in South Africa. This baseline defines the key elements that have an impact on how private sector businesses operate and how it determines their investment choices as a step to conceptualizing indicators for enhanced involvement, responsibility, and environmental stewardship.

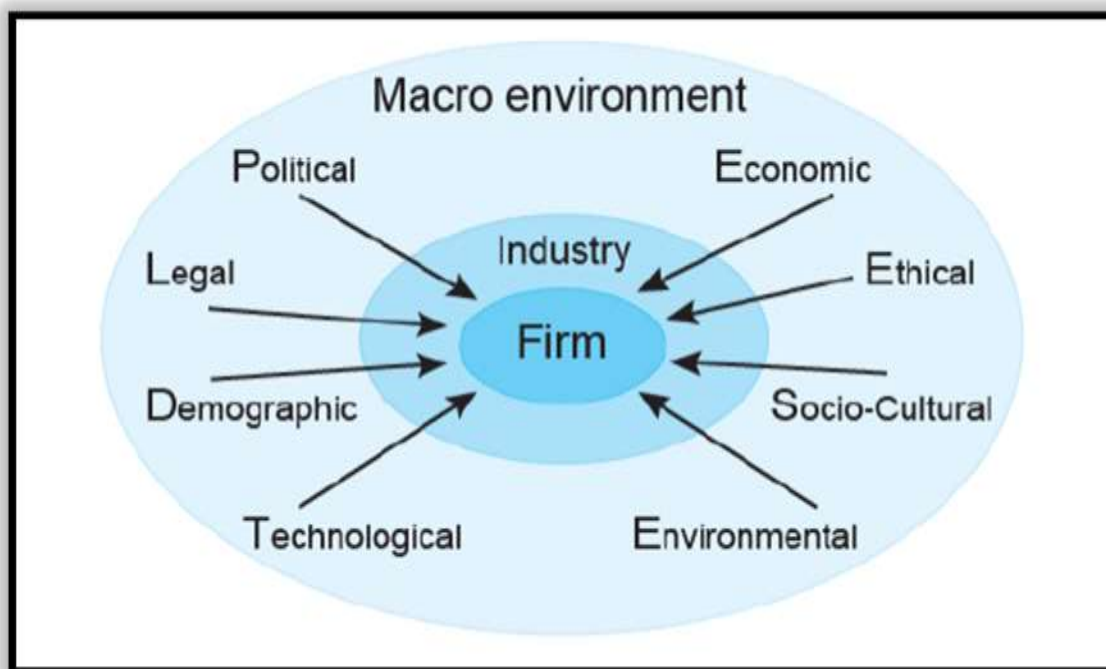


Fig. 1. Macro environment forces affecting a firm (Source: Jurevicius, 2013)

2. Methodology

It is essential to examine several aspects to analyze the context of the SA Private sector property provider comprehensively. These aspects typically fall under categories, such as legal, economic, environmental, or political, which emphasizes the need for careful selection of context dimensions to be considered in this research (Tsilika, 2014). Therefore, the PESTEL analysis was deemed to be more suitable for the current investigation. Given that the PESTEL analysis has been successfully applied as a framework for strategic-level decision-making and has been suggested as a potent method for the creation of credible hypothetical scenarios and innovative business strategies (Matovi, 2020 Thakur, 2021). This approach covers six variables of factors that are external to the private sector (Political, Economic, Social, Technological, Environmental, and Legal), consequently, it enables understanding of the issue from several perspectives and classifications. PESTEL analysis serves two main purposes in assessing the PSPSs in this study: a) enabling the identification of the setting in which the PSPC operates and b) providing data to aid in understanding environments and events that may have an impact on how they apply AR.

2.1. Review Process

This study made use of the integrative review methodology, which was developed by Whittemore and Knafl. It is a review technique that analyzes and synthesizes literature to thoroughly comprehend a particular concept (Whittemore & Knafl, 2005; Marsh et al., 2020). It is particularly helpful for addressing new or emerging concepts trending in various fields (Marsh et al., 2020) Given the current momentum around CE, the topic of AR practices and initiatives in the PSPCs would greatly benefit from an integrative review of the literature as no overview of the body of research has been done on this topic so far.

Moreover, integrative literature evaluations have been shown to provide important contributions to new knowledge by aiding in the initial or preliminary conception of a subject (Klein et al., 2020). The selection of pertinent research through a wide sample frame of varied sources, including theoretical, empirical, academic, and non-academic sources makes choosing to perform an integrated literature review on AR practices in the private sector particularly appropriate.

A systematic search to identify published articles about the application of AR in PSPCs was conducted as the first step in the evaluation process. The Tranfield, Denyer, and Smart (2003)-inspired methodological approach, which provides a review process in three stages: planning, execution, and reporting, was used to organize the sample frame. Considering Scopus is the largest academic database in the world and contains citations to evaluated abstracts from a variety of scientific and research literature, it was selected as the database's source (Tupan et al., 2018)

The search was conducted in the title, keyword, and abstract fields of the Scopus database using combinations of PESTEL-related terms (“political factor,” “economic factor,” “social factor,” “technical factor,” “environmental factor,” “legal factor,”). In addition search terms including (“adaptive reuse,” “private sector,” “private companies,” “construction firm”) were added to limit the search results to a private sector context. The most relevant literature on PSPCs in the area of AR implementation was deemed to be sufficiently covered by these terms. Initially, 242

published papers were found., followed by a screening of the titles, abstracts, and, in certain cases, the full text to ensure relevance to the review at hand.

Following the screening, 33 scientific papers made up the final sample from the systematic search. Since adaptive reuse is a developing field of study and its evaluation in PSPCs may not have been exclusively covered by peer-reviewed publications available through Scopus, it was considered to source for potential publications outside of this source. Consequently, a purposive sampling procedure was combined with this systematic selection of papers to include an additional set of 14 research papers, non-academic papers, and documents from non-governmental and international bodies that were found through a hand search and Google Scholar. The total corpus of resources for the research consisted of 47 papers. This study employed a qualitative content analysis methodology. Results of the analysis are presented in narrative form for each of the six PESTEL contexts. These inquiries aimed to provide a broad overview of the PSPCs context in South Africa, identifying internal and external elements that encourage or inhibit adaptive reuse for housing delivery.

3. Results

The data presented in this section gives a succinct overview of the major factors from the PESTEL dimensions influencing the private sector property providers in the application of AR. The outcome of the examined factors is shown in Table 1.

Table 1. Issues identified from PESTEL analysis (Source: Authors' work)

Political	Economic	Social
<ul style="list-style-type: none"> - Political situation - Business ethics - Taxes - custom fees 	<ul style="list-style-type: none"> - Interest rates - Inflation rates - Exchange rate -Fund availability 	<ul style="list-style-type: none"> - Societal culture - Norms -Population dynamics -Beliefs and attitudes - Relevant Skills - Awareness of Adaptive reuse
Technical	Environment	Legal
<ul style="list-style-type: none"> - Technical skills - Expertise -Relevant training -Knowledge -Experience of Adaptive reuse 	<ul style="list-style-type: none"> - Environmental processes - Environmental licensing - Green building policies -Energy efficiency requirements 	<ul style="list-style-type: none"> - Policy and building regulations - Approval of reuse - Environmental compliance - Building codes and heritage requirements

3.1. Political context

Resolving concerns about the stability of the political situation in the market should take precedence when taking this factor into account. Consideration should be given to business ethics, taxes, levies, and customs as well as the effects of local laws and regulations on businesses (Bullen and Love, 2010; Vardopoulos et al., 2021). Additionally, the market constraints and the tax laws of projects including adaptive reuse should be considered. These factors as illustrated in Figure 2 determine the extent to which a government may influence the operation of the private sector property industry. For instance, many prior housing strategies in South Africa were more focused on political objectives and the enhancement of economic indicators than they were on concerns of quality and sustainability (Ross et al., 2010).

Additionally, political unrest, poor management, political intolerance, public protests, and violence sometimes taint the political climate in South Africa (Rahman, 2021). Many times, these issues impede the growth and advancement of the economy. Thus, gaining the public's and investors' support and confidence considering the political obstacles becomes one of the most crucial factors for private sector investment through adaptive reuse. The degree of political sustainability is naturally impacted by the effectiveness and transparency of the policies (Besley, 2015). Therefore, promoting the private sector's use of the adaptive reuse idea in South Africa will require supportive government policies and strategies at all levels.

Economic context

These refer to escalating prices of building materials, interest rates, the gross domestic product (GDP), income, government spending, the state of the economy, the distribution of funding for infrastructure, and government financial assistance, among others. These factors as reflected in the second tile (economic) in Figure 2 pose a threat to the involvement of the PSPCs in AR projects. The private sector in South African property is mostly profit-driven and concerned with the potential market for the proposed reuse project and the financial sources. The ability of the new usage to generate financially viable activities is of utmost importance (O'Donnell, 2004; Tam & Hao, 2019).

To comply with current building rules, such as those pertaining to fire safety and energy efficiency, reuse projects may require significant capital expenditure (Yap, 2013). Additionally, not every façade of a building, such as an industrial one, can satisfy the standards for residential use. The conversion process would require significant, expensive changes.

However, for the project to be attractive to the private sector, it must reach a certain degree of economic efficiency where its expenses are outweighed by its benefits, both tangible and intangible. Therefore, the government must create enticing financial incentives and favorable interest rates to stimulate the adaptive reuse of buildings by private sector property providers.

Social context

The sociological aspect considers all incidents that have a social impact on the housing market and neighborhood. Considering this, it is also necessary to take into account the project's benefits and drawbacks for the local population (Bullen and Love, 2011; Foster, 2020). These elements include population dynamics, cultural norms, and expectations, societal norms, cultural backgrounds, education levels, belief systems, behavioral patterns, user demographics, social customs, a lack of adequate private sector skills, a lack of understanding of the advantages of adaptive reuse, etc. as seen in Figure 2.

The social context of adaptive reuse is somewhat challenging because it has varied connotations for various groups of people (Tweed & Sutherland, 2007), for example, when compared to western, city-style housing, some, for instance, display a low level of acceptance of the traditional styles that are retained to preserve a building's legacy and to foster a sense of community (Ross et al., 2010; Gravagnuolo et al., 2021). By fostering cultural traditions and forms, the reuse of historic structures should guarantee the continuation of social life, which adds to the place's cultural worth (UNESCO, 2007). In South Africa, where there is potential to utilize and preserve many traditional and heritage structures, it will be important to overcome this barrier by strengthening awareness of AR benefits for the private sector to leverage this opportunity.

Technological context

They refer to the technicality, skills, and expertise required for renovation, refurbishing, and conversion which adaptive reuse fundamentally requires. Unlike regular construction projects, adaptive reuse building projects demand technical considerations and specialized knowledge of building techniques to achieve sustainability (Bullen and Love, 2011; Sanchez et al., 2020; Foster, 2020). Due to a lack of knowledge, competence, and skills required for sustainable reuse projects, only a few South African construction businesses apply the concept of adaptive reuse of buildings. To develop comprehensive outline arrangements that improve building performance and provide a lucrative investment, the adaptive reuse project design process is also intended to be a joint effort from several stakeholders (Aigwi et al., 2020).

Planning and renovation competencies are necessary for the adaptive reuse of built heritage, which most likely raises the project's cost and duration. In the context of South Africa currently, there is a dearth of expertise in implementing the adaptive reuse technicalities, either in planning or in the renovation work on site. A project component may need to be redone or delayed due to a lack of knowledge and expertise, which raises the cost of carrying out this project (Ngcengeni, 2020). To facilitate more involvement, it is, therefore, necessary to invest in training and capacity development in this area moving forward.

Environmental context

The use of environmentally friendly technologies, energy efficiency, and climate change are discussed in relation to government policy. It includes the demand for greener buildings, and the capacity of residents to purchase repurposed homes, among others. Private property providers incorporating an adaptive reuse approach are still in their infancy in

South Africa, as opposed to other nations like Australia, the UK, and the United States where there have been many successful examples of adaptive reuse and where citizens and clients demand for or to repurpose buildings (Plevoets, & Cleempoel, 2019)

In South Africa, there are laws requiring green building practices, however, architects are cognizant that some adaptively reused buildings may lose their cultural relevance if some environmental design features are added rigorously. However, some have claimed that the green requirements needed to implement adaptive reuse for existing structures might not be attainable (Bullen, 2007; Plevoets, & Cleempoel, 2019) and because any new building structure might not blend in with the current structure, creative and adaptable design solutions are needed (Foster, 2020). To encourage private property sector engagement, it is crucial that the government loosen some of these regulations for some reuse projects that may fit into this category.

Legal context

While there are specific policies that companies uphold for themselves, this factor takes into account all legal issues, both internal and external, that have an impact on the business environment in a country (Yang et al., 2012; Aigwi et al., 2020). For example, legislation and regulatory standards such as zoning, building codes, and byelaws are required for the process of building construction and also, particularly for reuse projects (as in Figure 2).

The fact that South Africa is ensnared in accepting the status quo and has little or no legislation to assist building reuse, while the rest of the world is making progress with sustainable and green buildings, is concerning (Arndt et al., 2021; Odiyo et al., 2022). Due to this basic deficit in planning and policy, as well as the strict adherence to statutory construction requirements, preserving the historic value of the building and adaptive reuse of buildings becomes difficult and complex.

When legacy structures are made to comply with current building requirements, the cost of dealing with regulatory authorities adds an additional cost, and as a result, many heritage buildings have been degraded (Wilkinson et al., 2009; Foster, 2020). When viewed in the context of enabling climate for private developers in South Africa, the policy for adaptive reuse is ineffective. To ensure that functional criteria are followed and that the private sector is more actively involved, suitable legal and regulatory considerations will be necessary.

4. Discussions

The previous section presented a description of the environment in which the PSPCs operate, envisioning possible incidents or factors that would influence their application of adaptive reuse for housing developments. This brief overview demonstrates the significance of PSPCs to South Africa's development. However, these private businesses operate in a complex environment with shifting regulations affecting economic, political, and legal aspects, which negatively affects their operations and contributions and deters private investment and infrastructure development (Smith, 2015; World bank, 2019).

From the policy context, which ranges from restrictions that prohibit the use of adaptation techniques to onerous tax and customs regulations (Besley, 2015; Vardopoulos et al., 2021), to the absence of financial incentives

for investment in adaptation (Tam &Hao, 2019), the climate for participation has been so much stiff. The legal framework also shows regulatory complexities, like bylaws or zoning regulations, which discourage involvement (Foster, 2020). Furthermore, in the social and technological environment, the private sector's lack of capability, awareness, knowledge, and skills is equally of concern (Foster 2020; Gravagnuolo et al., 2021).

The private sector offers intriguing prospects for innovation and sustainable growth when well-enabled, but this advantage is diminished by the numerous standards and restrictions that are in place in comparison to other developed nations (Economic report for Africa, 2020). The private sector organization might find it difficult to adapt if it does not comprehend these issues. Therefore, this PESTEL analysis is useful in comprehending the macroenvironment that influences their operations in regard to adaptive reuse.

Given the aforementioned, the majority of problems that the PESTEL analysis in this study revealed pose serious challenges to the private property sector providers in implementing in adaptive reuse concept. Further advice is listed below:

- The current legal framework in South Africa must promote community and private participation in issues including heritage preservation and adaptive reuse.
- Most local planning authorities may relax planning and building regulations under current state and territorial law to promote the usage or preservation of a historic site.
- To motivate the private sector to actively participate in sharing the government's burden of providing housing through the concept of adaptive reuse, tax breaks, and some economic and planning incentives are needed.
- To influence a positive mentality change, more public awareness of the advantages of adaptive reuse for the private, public, and community sectors is necessary.

5. Conclusion

To address the uptake of adaptive reuse by private sector property companies and to set forth directions for increased participation, it is crucial to assess the microenvironmental elements influencing their operations. The PESTEL factors uncovered in this study offer guidance for the public sector on how to increase private sector involvement. This study's findings have implications for urban planning as adaptive reuse can play a crucial role in revitalizing urban areas and preserving historic buildings, thus South African cities can unlock the economic potential of her historic building stock and create sustainable neighborhoods.

Further, the study has an implication for economic development given that adaptive reuse can also promote economic development by creating jobs and attracting investment. Property companies that invest in adaptive reuse can create new jobs in construction, property management, and other related industries. Additionally, adaptive reuse projects can be used to attract new businesses and investment to urban areas, spurring economic growth. This study's findings suggest that private sector property companies can be encouraged to invest in adaptive reuse by reducing regulatory barriers and increasing access to financing thereby increasing the development of new residential and

commercial real estate while lowering carbon emissions and promoting sustainable development. Therefore, the findings of this study could be advantageous for both private and public sector property providers. Of special notice is the government, which is in charge of most potential solutions given to eliminate the barriers to more sustainable development.

This study also underscores the potential of public-private partnerships in promoting adaptive reuse. The government can play a crucial role in incentivizing and supporting private sector involvement in adaptive reuse, providing financing, tax incentives, and other policy measures that encourage the uptake of adaptive reuse projects. Thus, by working together, both sectors can create more resilient, sustainable communities. In conclusion, this study's findings suggest that it is vital to recognize the role of microenvironmental factors action in the areas of political, economic, social, technological, environmental and legal and take proper relevant action that can encourage greater private sector participation in adaptive reuse for sustainable development.

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