

أثر العوامل الاقتصادية على تطبيق المباني السكنية المستدامة في الرياض

إعداد /

عبد المحسن خميس عذاب (222000817)

زياد سعيد الزهراني (222000568)

علاء عبد الحليم العشي (222001136)

إشراف /

د. وليد عبد الجواد سليمان صديق

د. الفيصل عبد الحميد محمد حسن

العام الدراسي:

2023

Midocean University



College of Management

Department of Project Management

**The Impact of Economic Factors on The Implementation of Sustainable Residential Buildings in
Riyadh**

Prepared by:

- **Abdulmohsen Khamis Athab (222000817)**
- **Zeyad Saeed Alzahrani (222000568)**
- **Alaa Abdulhalim Alashi (222001136)**

Supervised by:

Dr. Waleed Abdul Jawad

Dr. Al Faisal Hassan

Year:2023

Table of Contents

Abstract	4
Introduction	5
Study Problem.....	5
Importance of the Study.....	6
Objectives of The Study.....	6
Study Questions	7
Literature Review	7
Research Methodology	8
Study Tools.....	9
Fields of Study (Study Limitations)	9
Study Sample.....	10
Findings.....	11
Market Demand and Sustainable Practices.....	11
Income Levels and Consumer Investment.....	12
Affordability and Consumer Investment.....	12
Finance and Investment Choices for Developers	13
Cost of Capital and Investment Choices	14
Economic Variables and Public Awareness	14
Propensity of Developers and Architects to Invest in Public Awareness	15
References and Resources	16

Abstract

This research investigates "The Impact of Economic Factors on The Implementation of Sustainable Residential Buildings in Riyadh" through a comprehensive questionnaire administered to 84 experts in the field.

The findings highlight the pervasive influence of economic considerations on various facets of sustainable construction practices. Notably, 42.86% of respondents identify market demand as "very influential" in driving sustainable practices, indicating a consensus among professionals. Income levels emerge as a significant determinant, with 52.38% of experts deeming it "very influential" in shaping consumer investments.

Affordability is a key factor, influencing 80.95% of respondents, while the availability of finance and the cost of capital play crucial roles in developers' decisions, rated "very influential" by 52.38% and 47.62% of participants, respectively.

Economic variables, including education and marketing, impact public awareness (61.91%) and motivate real estate developers and architects to invest in awareness initiatives (66.66%).

These findings contribute nuanced insights into the intricate relationship between economic factors and sustainable residential construction in Riyadh, providing guidance for stakeholders in fostering sustainable urban development.

يتناول هذا البحث موضوع "أثر العوامل الاقتصادية على تنفيذ المباني السكنية المستدامة في مدينة الرياض" من خلال استبيان شامل تم إجراؤه على 84 خبيراً في هذا المجال.

تسلط النتائج الضوء على التأثير المنتشر للاعتبارات الاقتصادية على مختلف جوانب ممارسات البناء المستدام. ومن الجدير بالذكر أن 42.86% من المشاركين يعتبرون طلب السوق "مؤثراً جداً" في دفع الممارسات المستدامة، مما يشير إلى وجود إجماع بين المهنيين.

تظهر مستويات الدخل كمحدد مهم، حيث يعتبرها 52.38% من الخبراء "مؤثرة للغاية" في تشكيل استثمارات المستهلكين. تعتبر القدرة على تحمل التكاليف عاملاً رئيسياً، حيث تؤثر على 80.95% من المشاركين، في حين يلعب توفر التمويل وتكلفة رأس المال أدواراً حاسمة في قرارات المطورين، حيث تم تصنيفها على أنها "مؤثرة للغاية" بنسبة 52.38% و 47.62% من المشاركين، على التوالي.

وتؤثر المتغيرات الاقتصادية، بما في ذلك التعليم والتسويق، على الوعي العام (61.91%) وتحفز المطورين العقاريين والمهندسين المعماريين على الاستثمار في مبادرات التوعية (66.66%).

تساهم هذه النتائج برؤى دقيقة حول العلاقة المعقدة بين العوامل الاقتصادية والبناء السكني المستدام في الرياض، مما يوفر إرشادات قيمة لأصحاب المصلحة في تعزيز التنمية الحضرية المستدامة.

Introduction

Within the dynamic realm of urban growth, the pressing need to establish sustainable living conditions has emerged as a primary focus for cities across the globe. Riyadh, the dynamic capital city of Saudi Arabia, finds itself at the forefront of this paradigm shift, as it confronts the complex task of reconciling economic expansion with the imperative of environmental preservation. The building sector, which plays a significant role in the ongoing urban development, is currently facing a critical juncture when economic considerations converge with the urgent demand for sustainable methodologies. This study investigates the core of this intersection, with the objective of elucidating the complex correlation between economic variables and the adoption of sustainable residential constructions in Riyadh.

Riyadh, being a vibrant metropolitan center, is confronted with a growing need for residential accommodations due to the increase in population and influx of people from rural areas to the city. Simultaneously, the urban area is confronted with the pressing imperative to reduce its ecological impact and address the consequences of climate change. Sustainable residential constructions, which exhibit attributes such as energy efficiency, utilization of eco-friendly materials, and diminished carbon emissions, present itself as a feasible resolution to this double predicament. Nevertheless, the successful execution of these structures relies on a multitude of economic variables, including aspects such as expenses associated with construction, the level of demand in the market, policies set by the government, and the attitudes of potential investors.

This study undertakes a thorough investigation of the economic factors that drive the acceptance and implementation of sustainable residential constructions in Riyadh. This study seeks to elucidate the problems and opportunities encountered by stakeholders in the building sector through an analysis of the complex interrelationship between economic variables and sustainable construction methods. A comprehensive comprehension of the impact of economic considerations on decision-making processes is of utmost importance for politicians, developers, investors, and environmental campaigners alike.

Study Problem

The present study aims to examine the primary challenges encountered in the sustainable building industry in Riyadh, with a particular emphasis on the influence of market demand on the implementation of environmentally conscious techniques. The analysis considers housing pricing and customer preferences, investigating the impact of economic factors, such as income levels and affordability, on consumer investment decisions and developers' decision-making processes. It

specifically focuses on the financial difficulties associated with these elements. Moreover, the study investigates the impact of economic factors on the level of public awareness, educational campaigns, and the propensity of architects to advocate for sustainable housing. The study seeks to provide valuable insights into the sustainable construction environment of Riyadh by examining these key elements.

Importance of the Study

The study seeks to elucidate the relationship between economic considerations and the decision-making processes of different stakeholders, with a specific focus on their impact on the adoption of sustainable residential structures in Riyadh. The aforementioned aims aim to provide a comprehensive understanding of the economic factors that influence market demand, consumer decision-making, developer investments, and public perceptions within the realm of sustainable construction methods.

The research results will make a valuable contribution to the scholarly discussion and perhaps provide valuable perspectives for politicians, developers, investors, and environmental advocates who are dedicated to fostering a more sustainable urban future in Riyadh.

Objectives of The Study

The principal aim of this study is to examine the intricate correlation between economic factors and the implementation of sustainable construction methods in the city of Riyadh. The primary objective of this study is to specifically target and achieve the following goals:

- 1- This study aims to analyze the correlation between the market demand for residential buildings and the implementation of sustainable construction practices.
- 2- Evaluate the impact of economic variables, including income levels and affordability, on the propensity of consumers to engage in investments pertaining to sustainable residential properties.
- 3- Examine the influence of economic factors on the decision-making procedures of developers engaged in sustainable residential initiatives.
- 4- This study aims to examine the impact of economic factors on the level of public awareness and perceptions of sustainable residential buildings. The analysis will span various dimensions, including education, marketing techniques, and social influence.

5- Examine the degree to which economic factors impact the inclination of real estate developers and architects to invest in endeavors that seek to enhance public knowledge regarding the economic advantages linked to sustainable residential developments.

Study Questions

The research will address the following questions:

- To what extent does the market demand for residential buildings influence the adoption of sustainable construction practices, considering economic considerations such as housing pricing and customer preferences?
- To what extent do income levels influence the inclination of consumers to make investments in sustainable residential properties in Riyadh?
- To what extent does affordability influence the inclination of consumers to make investments in sustainable residential properties in Riyadh?
- To what extent does the availability of finance impact the investment choices made by developers involved in sustainable residential projects?
- To what extent does the cost of capital impact the investment choices made by developers involved in sustainable residential projects in Riyadh?
- To what extent do economic variables impact the level of public awareness and perception about sustainable residential buildings in Riyadh? This inquiry encompasses various aspects, including education, marketing strategies, and social influence.
- To what extent do economic variables influence the propensity of real estate developers and architects to invest in initiatives aimed at promoting public knowledge of the economic advantages associated with sustainable residential developments in Riyadh?

Literature Review

In the recent years the sustainability becomes widespread and has started to get a great consideration in research for our region which enriching the literature review and gives us a better understanding of this critical issue to tackle it effectively and coming out with the right recommendations required to filling the gap in achieving a sustainable residential building. One of these researches is "Challenges facing sustainable housing in Saudi Arabia: A current study showing the level of public awareness" by Susilawati, Connie & Al Surf, Mohammed (2011), which was emphasizing that the awareness and conviction in addition to return to the ancient architecture practices are the main factors to achieve the sustainability in housing projects with admitting that financial factor could not be ignored but with no

much details of explaining the level and range of that affect and this what we are trying to do achieve herein.

In the other hand Esam Haidar & Mohammad Alghamdi in there "Towards Affordable and Sustainable Housing" research see that Adopting an institutional framework as transitional phase in the housing development starting from regulator and the governmental entities as housing ministry passing through consulting firms and real estate's developers and ended with end-users, is the way to get out of this dilemma though the cost impact of these legislations didn't link directly to the housing affordability, it is pretty clear.

Also, Hanan Taleb in there "Towards Sustainable Residential Buildings in the Kingdom of Saudi Arabia" research, Farajallah Alrasheda and Muhammad Asifa in there "Saudi Building Industry's Views on Sustainability in Buildings" research, like many others seeing that energy & water consumption are the key factors in this problem even though these factors enhance buildings' sustainability but still we don't see interest toward the concept within the publics hence this what we're trying to link by examining the financial significance and its consequence on the public willingness.

Research Methodology

This study utilizes quantitative methodology to examine the influence of economic factors on the implementation of sustainable residential buildings in Riyadh. The principal approach employed for data collecting is the utilization of a meticulously designed questionnaire, which adheres to a standardized format. This questionnaire is thereafter disseminated to a representative sample of 84 esteemed professionals specializing in the domain of sustainable construction, specifically within the geographical confines of Riyadh. The questionnaire has been specifically crafted to gather valuable data into the intricate correlation between economic considerations and the adoption of sustainable practices. The survey instrument incorporates various essential subjects, such as market demand dynamics, consumer behavior, financial concerns, public awareness, and the strategic perspectives of real estate developers and architects .

The process of selecting specialists is predicated upon their extensive experience and expertise in the field of sustainable construction, ensuring that their comments are characterized by nuanced and well-informed opinions. The data that has been gathered will be subjected to statistical analysis methods in

order to identify patterns, correlations, and trends. This will facilitate a thorough comprehension of the manner in which economic considerations impact decision-making processes within the realm of sustainable residential constructions in Riyadh.

Study Tools

A survey instrument will be developed with the purpose of collecting quantitative data from a sample of 84 professionals specializing in the domain of sustainable construction within the city of Riyadh. The survey will encompass many areas that will examine market demand dynamics, consumer behavior, financial concerns, public awareness, and the strategic perspectives of real estate developers and architects. To assist fast data analysis, the study will utilize closed-ended questions that incorporate Likert scales and multiple-choice options.

Fields of Study (Study Limitations)

This study aims to examine the influence of economic factors on the implementation of sustainable residential buildings in Riyadh. However, it is important to recognize that there are certain inherent limitations in this research .

The potential limitations of the study's findings may arise from the narrow scope of the research, which primarily concentrates on the city of Riyadh, hence potentially limiting the generalizability of the results due to the city's distinct socio-economic and cultural attributes. The utilization of a questionnaire as the sole method for data collection involves possible biases, as the responses obtained are susceptible to the interpretation and perception of the participants. Furthermore, the cross-sectional design of the study may provide limitations in capturing the dynamic and evolving nature of economic factors that impact sustainable construction practices over time. In addition, it is important to consider that the level of expertise among the chosen sample of 84 experts may vary, which could potentially affect the overall comprehensiveness of the insights obtained .

Finally, it should be noted that although the research mostly examines economic aspects, there is a lack of comprehensive investigation into other contextual elements that may influence the adoption of sustainability practices, such as cultural influences or regional legislation. It is crucial to acknowledge these constraints in order to develop a comprehensive understanding of the study's results and to provide direction for future investigations in this dynamic area of study.

Study Sample

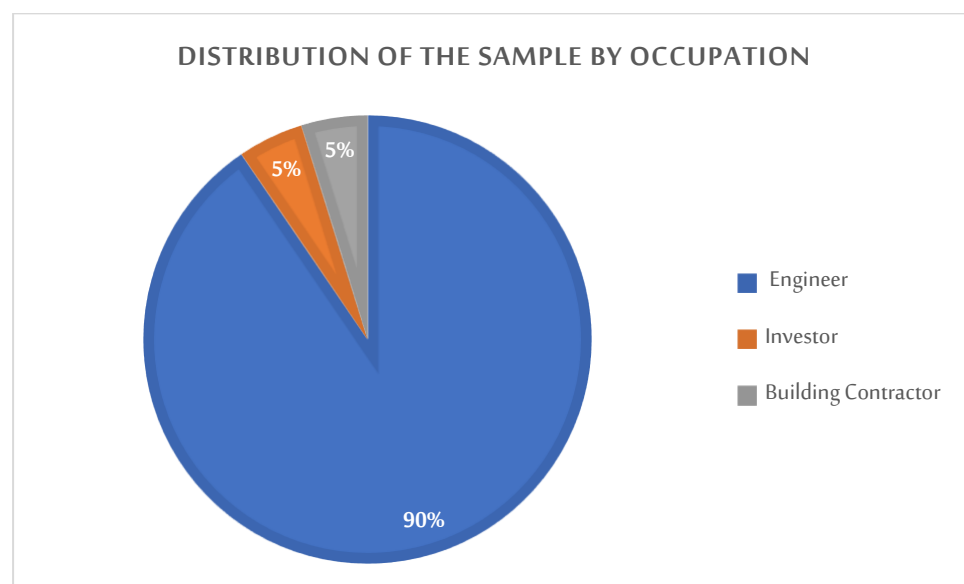
The study sample comprises professionals actively involved in the field of sustainable construction in Riyadh, representing a diverse cross-section of expertise.

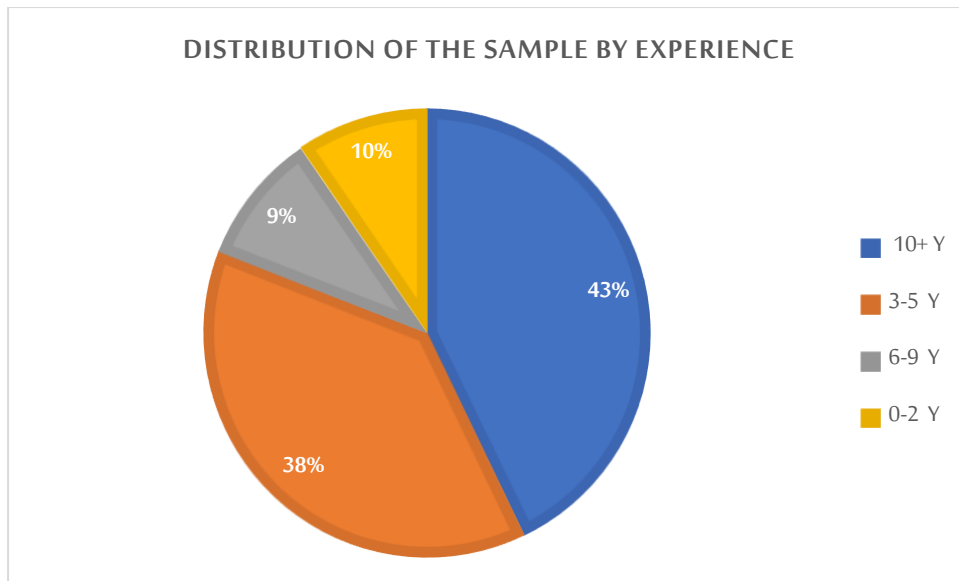
A majority, constituting 90 percent of the sample, consists of seasoned engineers with varying specializations related to construction and sustainability. These individuals bring a wealth of technical knowledge and direct experience to the study.

Complementing this, 5 percent of the sample comprises building contractors who play a pivotal role in translating sustainable designs into tangible structures. Another 5 percent represents real estate investors, providing valuable insights into the financial considerations that influence decisions related to sustainable residential buildings.

In terms of experience, the study sample demonstrates a broad spectrum. A substantial 42 percent of participants boast over 10 years of professional experience in the industry, offering a seasoned perspective on the evolution of sustainable practices. Furthermore, 10 percent of the sample falls within the 6 to 9 years of experience bracket, providing a mid-career perspective. The study also includes 38 percent of individuals with 3 to 5 years of experience, offering insights from professionals who have witnessed current trends and developments.

Lastly, 10 percent of the sample comprises those with two years or less of experience, ensuring a representation of fresh perspectives and emerging insights within the dynamic field of sustainable construction. This diverse and stratified sample aims to capture a comprehensive understanding of economic influences on sustainable residential building practices in Riyadh.

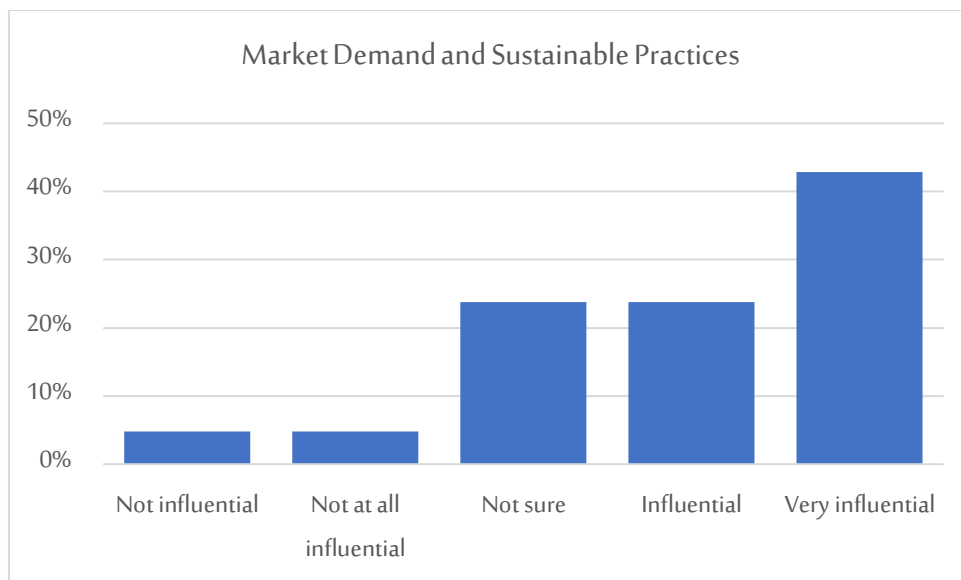




Findings

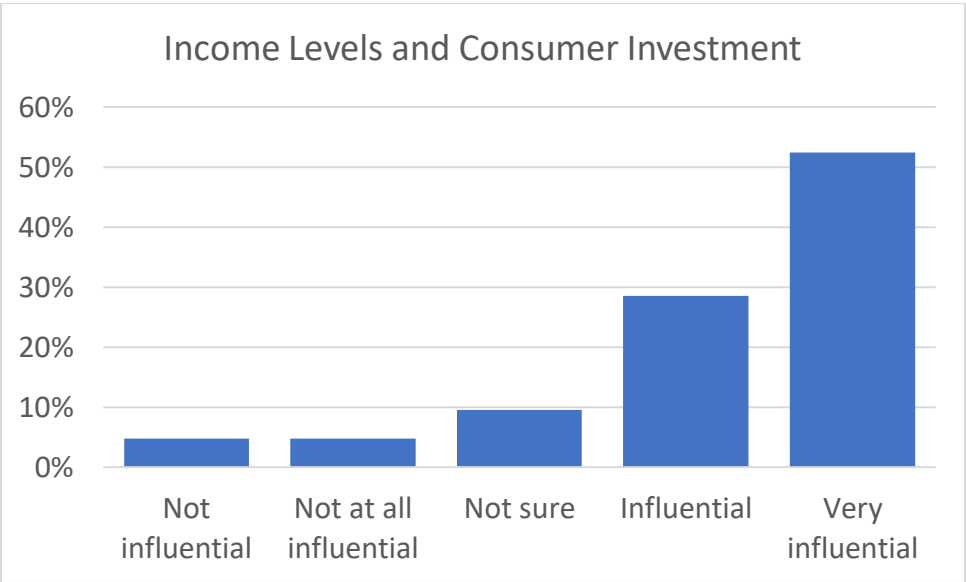
Market Demand and Sustainable Practices

The study reveals that a significant proportion (42.86%) of respondents perceive market demand for residential buildings as "very influential" in driving the adoption of sustainable construction practices. An additional 23.81% consider it "influential," indicating a substantial consensus among participants regarding the impact of market demand on sustainable construction practices.



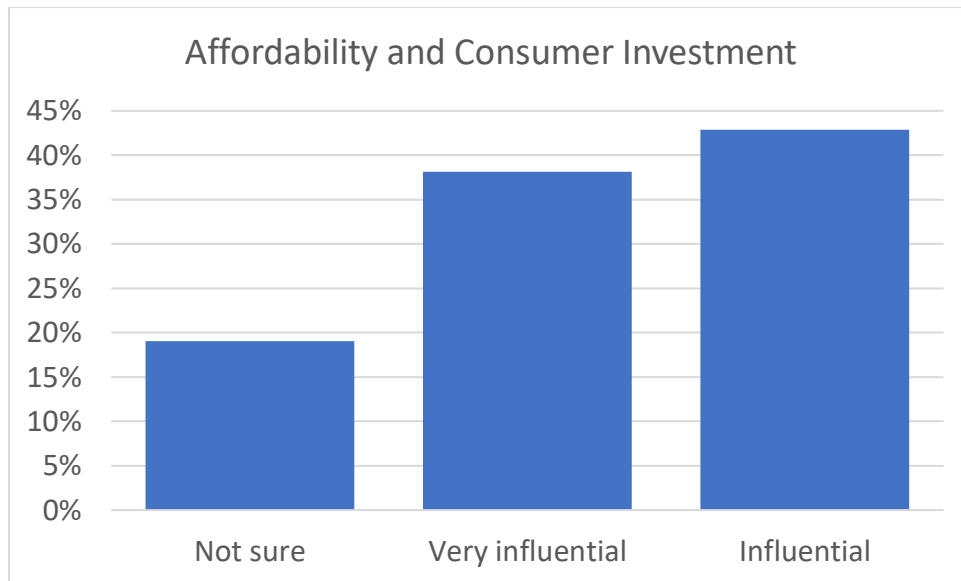
Income Levels and Consumer Investment

Findings indicate a strong correlation between income levels and consumer inclination towards investments in sustainable residential properties. A majority (52.38%) of respondents view income levels as "very influential," reflecting the pivotal role played by economic factors in shaping consumer choices in Riyadh's real estate market.



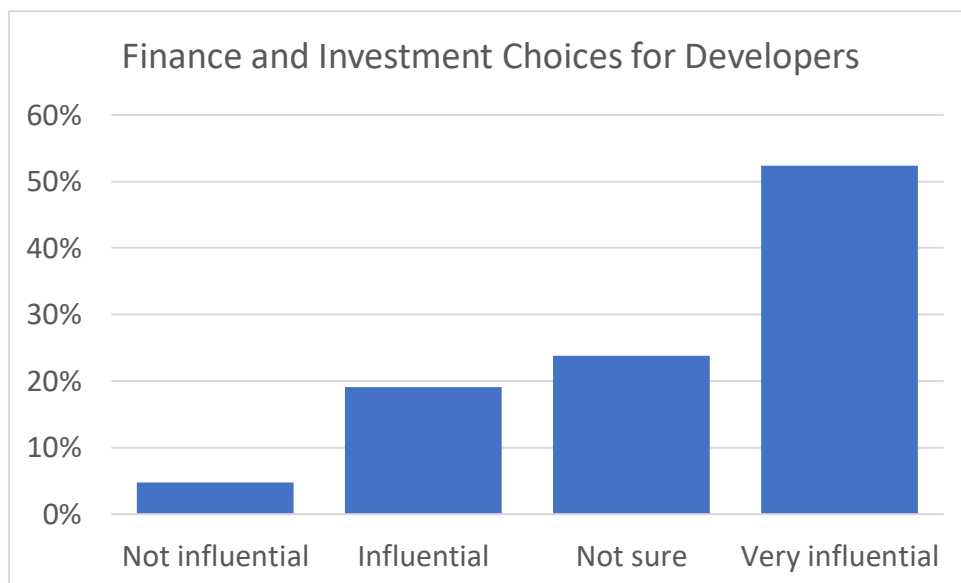
Affordability and Consumer Investment

Affordability emerges as a key factor influencing consumer investments in sustainable residential properties. A combined 80.95% of respondents find affordability either "very influential" (38.10%) or "influential" (42.86%), underlining the importance of economic considerations in driving consumer decisions.



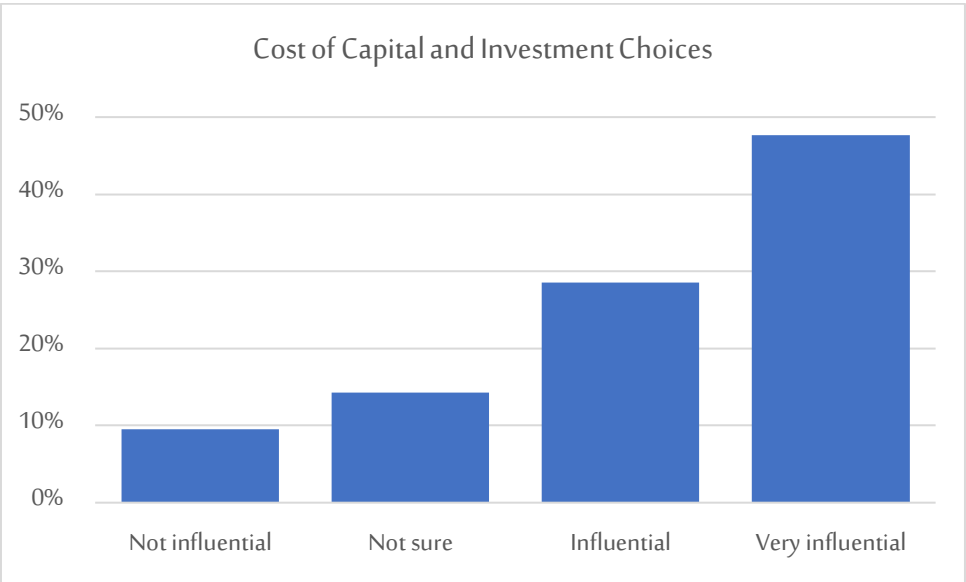
Finance and Investment Choices for Developers

The availability of finance significantly impacts the investment choices made by developers in sustainable residential projects. A majority (52.38%) of respondents consider it "very influential," underscoring the dependence of sustainable initiatives on financial support.



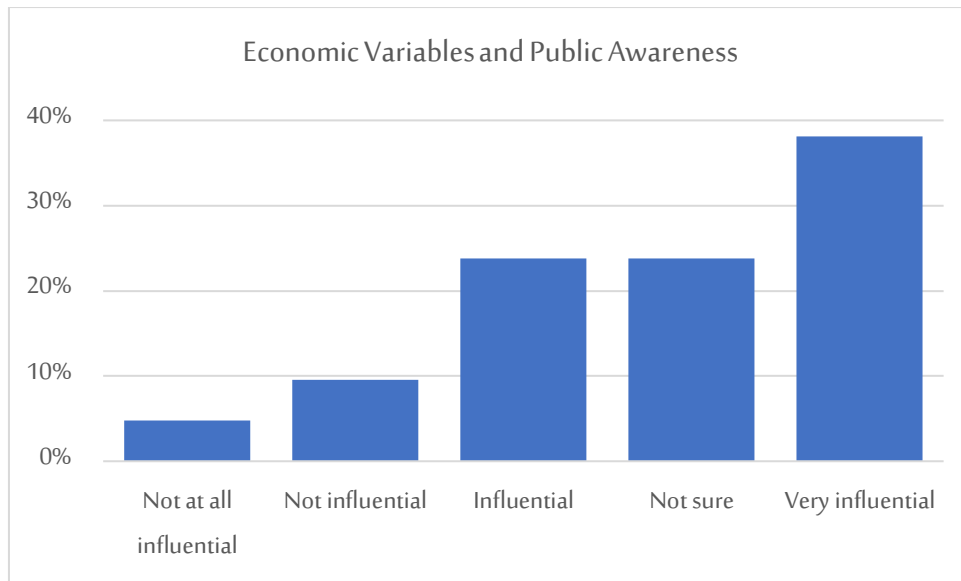
Cost of Capital and Investment Choices

The study indicates that the cost of capital plays a crucial role in shaping investment choices by developers in sustainable residential projects. Nearly half (47.62%) of respondents perceive the cost of capital as "very influential," emphasizing the financial considerations that influence decision-making in sustainable construction.



Economic Variables and Public Awareness

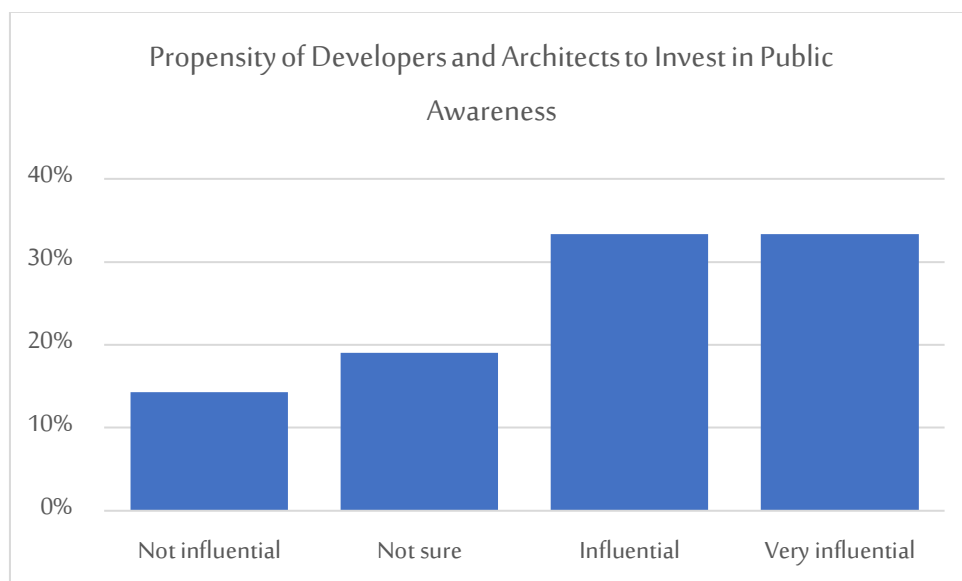
Economic variables, encompassing education, marketing strategies, and social influence, are perceived as significant influencers of public awareness about sustainable residential buildings. A combined 61.91% of respondents find economic variables either "very influential" or "influential," highlighting the interconnectedness of economic factors with public perception.



Propensity of Developers and Architects to Invest in Public Awareness

The study reveals a notable proportion of respondents (66.66%) acknowledging the influence of economic variables on the propensity of real estate developers and architects to invest in initiatives promoting public awareness. This finding emphasizes the economic motivations underpinning efforts to enhance public knowledge of the economic benefits associated with sustainable residential developments in Riyadh.

These findings collectively underscore the intricate interplay between economic factors and the implementation of sustainable residential buildings in Riyadh, shedding light on the nuanced perspectives of industry experts.



References and Resources

- Towards Affordable and Sustainable Housing: A Proposal to Adapt the Institutional Framework in the Transitional Phase in Adapt the Institutional Framework in the Transitional Phase in Kingdom of Saudi Arabia - Esam Abdulwahab Haidar Arch King Saud University, ehaidar@ksu.edu.sa - Mohammad Alghamdi King Saud University, Riyadh, malissan@ksu.edu.sa - Ali Salem Bahammam Prof King Saud University, bahammam@KSU.EDU.SA - 8-26-2021)
- Towards Sustainable Residential Buildings in the Kingdom of Saudi Arabia, Hanan M. Taleb, Ph.D. Researcher, University of Sheffield, UK
- Saudi Building Industry's Views on Sustainability in Buildings, Questionnaire Survey Farajallah Alrasheda and Muhammad Asifa, School of Engineering and Built Environment, Glasgow Caledonian University UK, Department of Architectural Engineering, King Fahd University of Petroleum & Minerals, Dhahran, Saudi Arabia
- Alshawaf, Mohammad (2008). "Evaluating the Economic and Environmental Impacts of Water Subsidies in Kuwait", Unpublished M.Sc. Thesis: Louisiana State University.
- Al-Yami, Ali and Price, Andrew (2006) "An Overview of Sustainability in Saudi Arabia," In The Joint International Conference on Construction, Culture, Innovation and Management. Dubai, 26-29 November 2006.