BARRIERS TO IMPLEMENTATION OF PUBLIC PRIVATE PARTNERSHIPS IN HOUSING PROJECTS IN SAUDI ARABIA: REAL ESTATE DEVELOPERS' PERSPECTIVE

BY

Mohammad Mahmoud Ashmawi

A Thesis Presented to the
DEANSHIP OF GRADUATE STUDIES

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

DHAHRAN, SAUDI ARABIA

In Partial Fulfillment of the
Requirements for the Degree of

MASTER OF SCIENCE

In

CONSTRUCTION ENGINEERING AND MANAGEMENT

April 2017

KING FAHD UNIVERSITY OF PETROLEUM & MINERALS

DHAHRAN- 31261, SAUDI ARABIA

DEANSHIP OF GRADUATE STUDIES

This thesis, written by **Mohammad Ashmawi** under the direction of his thesis advisor and approved by his thesis committee, has been presented and accepted by the Dean of Graduate Studies, in partial fulfillment of the requirements for the degree of **MASTER OF SCIENCE IN CONSTRUCTION ENGINEERING AND MANAGEMENT.**

Dr. Sadi Assaf
(Advisor)

Dr. Khalaf Al Ofi
Department Chairman

Dr. Bambang Suhariadi
(member)

Dr. Salam A. Zummo
Dean of Graduate Studies

Dr. Adel Al-Dosary
(Member)

9/4/17

Date

Dedicated to my Mother, my Father and my Family. For they have provided the support, love and affection, and without whom, none of my success would be possible.

In memory of my uncle, Waseem, for his kindness and support. Your life was a blessing to this world

ACKNOWLEDGMENTS

First and foremost, for our almighty God, who have blessed me with the health, strength and happiness so far in my journey of life.

For my Father, my Mother and my brother, Khalid, who showed all their support during my whole life. Thank you for your ongoing support and your unconditional love.

For my thesis adviser, Dr. Saadi Assaf, thank you for being a great mentor through this research and for your guidance, thank you for your understanding and patience. You have been like a father to me and my brother.

For the committee members, Prof. Adel Al-Dosary and Dr. Bambang, thank you for your encouragement along the path of my research and for being an effective part in this study.

Special thanks go to Dr. Soliman Al Mohawis, thank you for your passion and enthusiasm in teaching, and for your patience in answering my endless questions, and to teaching me to accept nothing but the best from myself.

For everyone who participated in this study, thank for your valuable time and for sharing your knowledge and experience with me.

For all my friends, Abzakh, Sha'at, Faris, Shbair, Mounir, Rafea and the rest. Thank you for the good days and the good laughs we had.

Lastly, to my University KFUPM, for which it provided us with all the necessary means to make this research possible.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

PPP: Public-Private-Partnerships

REDF: Real Estate Development Fund

SI: Severity Index

GSI: Group Severity Index

COV: Coefficient of Variation

SD: Standard Deviation

UNESCAP: United Nations Economic and Social Commission for Asia and the Pacific

ABSTRACT

Full Name : [Mohammad Mahmoud Ashmawi]

Thesis Title : [Barriers to Implementation of Public Private Partnerships in Housing Projects in Saudi Arabia: Real Estate Developers' Perspective]

Major Field : [Construction Engineering and Management]

Date of Degree : [April, 2017]

The need to find proper solutions to the current shortage and the growing demand for housing in Saudi Arabia is the reasons behind prioritizing housing in Vision 2030 of Saudi Arabia, which created a need for the participation of the private sector - considering the current economic downturn – in this matter. The involvement of the private sector in providing services has always been desirable, and Public-Private-Partnerships contracts could be proper a solution to develop large scale housing projects. However, this research aims to understand what barriers exist in the perspective of real estate developers that could prevent the use of such contracts, and what enablers could lessen the effects of these barriers.

The data collected in this research was through a survey questionnaire that was distributed among real estate developers in the Eastern Province of Saudi Arabia. The questionnaire concentrates on the severity of barriers to the use of PPPs by real estate developers. Additionally, respondents were asked to provide enablers or measures to lessen the effects of the barriers

It was found from the results of this study that the end-users' affordability of housing units is the main barrier behind the use of PPPs, as most of the developers believed that without affordable financing for housing, the PPPs model is less likely to succeed.

ملخص الرسالة

الاسم الكامل: محمد محمود عشماوي

عنوان الرسالة: معوقات تطبيق الشراكة بين القطاعين العام والخاص في مشاريع الإسكان في المملكة العربية السعودية: منظور المطورين العقاريين

التخصص: هندسة وإدارة التشييد

تاريخ الدرجة العلمية: أبريل، 2017

الحاجة إلى إيجاد حلول مناسبة للنقص الحالي في توفر الوحدات السكنية، بالإضافة إلى الطلب المتزايد عليها، جعلت من الإسكان أولوية في رؤية 2030 للمملكة العربية السعودية، مما أدى إلى لزوم مشاركة القطاع الخاص في زيادة عرض الوحدات السكنية – مع أخذ الانكماش الاقتصادي الحالي وانخفاض أسعار النفط في عين الاعتبار –.

مشاركة القطاع الخاص في تقديم الخدمات كان دائما مرغوباً، و الشراكة بين القطاعين العام والخاص قد تكون حلاً مناسباً لتطوير مشاريع إسكانية واسعة النطاق. هذا البحث يهدف إلى فهم المعوقات في منظور المطورين العقاريين التي تحدهم من المشاركة في هذه العقود، وما هي المقومات التي تخفف من حدة تأثير هذه المعوقات.

تم جمع البيانات بخصوص هذا البحث عن طريق إستبيان موجه لمطورين العقارات في المنطقة الشرقية من المملكة العربية السعودية. الاستبيان المستخدم يركز على حدة المعوقات لتطبيق الشراكة بين القطاعين العام والخاص التي يواجهها مطورون العقارات. بالإضافة إلى ذلك، تم سؤال المشاركين عن المقومات والتدابير التي يمكن اتخاذها للتقليل من حدة هذه المعوقات.

تمخض عن تحليل نتائج هذا البحث أن القدرة على تحمل تكاليف الوحدات السكنية هو المعوق الأساسي لتطبيق الشراكة بين القطاعين العام والخاص، حيث معظم المطورين كان يعتقد أنه بدون قدرة الساكنين على تحمل تكاليف التمويل، تقل فرص نجاح الشراكة لتطبيق هذا المفهوم على مشاريع الإسكان.

CHAPTER 1

INTRODUCTION

1.1 General

Public-Private-Partnerships (PPPs) are proven to be successful agreements for developing large scale public projects and services by the involvement of the private sector. The PPP term is broad and is not limited to only one type of contract or agreement. However, popular frameworks are developed to utilize the concept of partnering.

In Saudi Arabia, housing faces challenges as the population grows in urban cities. However, a proper involvement of the private sector in developing housing by the implementation of Public-Private-Partnerships can help in reducing the burden on the government to provide affordable housing to citizens.

This research aims to study the perception of real estate developers, towards the barriers that they face to partner with the public sector in developing housing projects. This report addresses the rationale behind this research, the adopted methodology and the findings.

1.2 Housing in Saudi Arabia

1.2.1 Housing Finance System in Saudi Arabia and Key Participants

There are many parties involved in the development process of housing projects in Saudi Arabia. Both public and private sectors are involved in the process of development, that include financing, construction, management, marketing and maintenance. According to (Assaf, Bubshait, & Al-Muwasheer, 2010), the following parties are involved in financing housing projects in Saudi Arabia:

- The Real Estate Development Fund (REDF)
- The public sector represented by the Ministry of Housing and Public Works (currently known as the Ministry of Housing)
- National banks
- The private sector either with or without loans from Real Estate Development Fund
- Joint-stock companies with funds from both the government and individuals
- Institutions, which provide housing for their employees (such as ARAMCO and SABIC).

The main provider of financing for housing is the REDF, which is run by the government. Recently, the loans provided by REDF to citizens have increased to 500,000 SR and the condition of land ownership is waived to be eligible for the loan (Sidawi, 2014). However, the limited number of loans and the long-time of granting them make the REDF incapable of meeting the demand, and that is due to the following reasons:

1. REDF high levels of delinquencies
2. Obstacles faced in the collection of debts
3. Limitations of alternative means and sources of home finance in general
4. REDF doesn't have the resources and the operational capacity to meet the large demand.

(Sidawi, 2014)

Also, banks provide only a limited number of housing loans and apply constraints in their lending conditions to avoid risks and potential losses (Sidawi, 2014).

Another study by (Sidawi & Meeran, 2011) argued that the conventional financial systems are not suitable for the cultural and religious environment in Saudi Arabia, where the concept of interests over loans either lacks awareness or acceptance among people. This adds to the challenges of engaging private financiers to finance housing projects, as this would severely limit the investment and lending provided by them.

Also, the authors mentioned that the REDF and banks provide only the initial mortgages needed to purchase the property, and no other ongoing costs needed for maintenance and upgrading the property. However, it's mentioned in a more recent study that the Saudi Savings and Credit Bank grants loans for these purposes and named them under "ongoing support" (Sidawi, 2014).

1.2.2 Shortage of Housing in Saudi Arabia

In its 9th development plan, the Ministry of Economy and Planning addressed the following challenges that the housing sector faces in the kingdom (The Ninth Development Plan, 2010-2014):

- Shortage of supply of housing units
- Low level of house ownership
- Unaffordable housing units for ownership or rental
- Lack of finance for housing or residential land
- Proliferation of slum neighborhoods

Also, the Ministry of Housing stated 4 challenges that the housing sector is currently facing:

- Limitation of housing units that cover all segments of the society
- Difficulties in obtaining appropriate housing financing.
- High dependence on governmental finance
- Inefficient real estate sector

(About Housing, 2016)

Even though there are massive efforts to deal with these challenges, the progress is slow and still behind the goals of housing. Also, the report noted that affordable housing should be the priority to meet the demand of low-income citizens.

A recent report published by Jones Lang LaSalle, revealed that the supply of housing units in Riyadh will increase at a constant pace every year from 2016 to 2018 (Riyadh Real Estate Market Overview, 2016). Moreover, the report highlighted the East Gate residential project, which is undertaken by the Ministry of Housing in collaboration with the private sector. The project consists of 7,000 villas, each villa at cost of 640,000 SR to the end-user, which can be borrowed from the REDF according to the report (Riyadh Real Estate Market Overview, 2016). This project already shows a progress in the housing market towards the implementation of PPPs.

1.3 Problem Statement

The issue of shortage in housing units in Saudi Arabia is one of the challenges that the government faces to fulfill the growing demand as part of the development of the country. The participation of the private sector is always encouraged to solve such a challenge. Under PPP agreements, both public and private sectors share the responsibility to deliver public projects and services. Having this in mind, and looking at the aspired partnering between the ministry of housing and real estate developers, arises the following questions:

1. What are the barriers faced by real estate developers to use PPPs in developing housing projects?
2. What are the significance levels of these barriers?
3. What measures could be taken to lessen these barriers?

1.4 Objectives

The main research objectives are summarized as follows:

1. To investigate the perceptions of real estate developers towards the barriers that prevent them from using PPPs to develop housing projects.
2. To identify the most significant barriers and rank them based on their importance.
3. Provide recommendations and enablers to lessen the barriers faced by real estate developers.

1.5 Significance

The current challenges in the economy of Saudi Arabia by the slump of oil prices, and the need to a transformation to an economy with minimum dependence on oil, created a need for the participation of the private sector in development projects to reduce the burden of the public sector in providing facilities and reduce the expenditure on large scale projects.

In the fulfilment of the Vision 2030 of Saudi Arabia, the National Transformation Program (NTP) was created to meet some strategic objectives, as well as specific goals. The example of the vision for housing is illustrated in Figure 1. The program specifies targets that must be met by the year 2020 by identifying key performance indicators, as well as benchmarking.

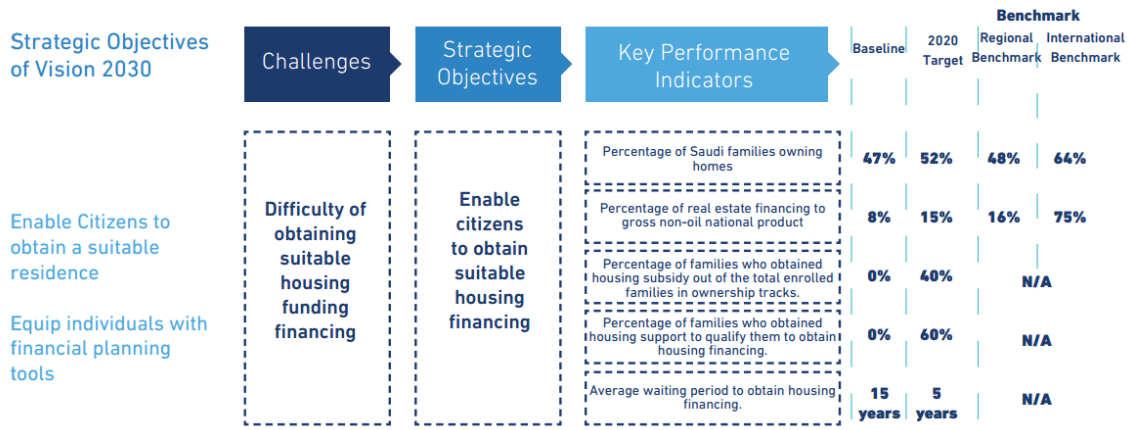

Figure 1: Example of the vision for housing

The Ministry of Housing set three strategic objectives that must be met by the year 2020 (National Transformation Program 2020, 2016):

1. Improve performance of the real estate sector and increase its contribution to the GDP.
2. Stimulating the real estate supply and raising productivity to provide residential products with appropriate price and quality.
3. Enabling citizens to obtain suitable housing financing.

And for each of these broad strategic objectives, there are clear and definitive targets to be met by 2020, and both regional and international benchmarks for each goal were also included. But for highlighting the efforts and aspirations, only a few of these goals will be mentioned in this text. For example, one of the targets of the first strategic objective mentioned above is to reduce the average time required to approve and license new residential real estate development projects from the current baseline of 730 days to 60 days by 2020. Another noteworthy target in housing is to reduce the "housing unit cost multiples of gross individual annual income" from the current baseline of 10 times to 5 times the annual income. Another one is to reduce the "average waiting period to obtain housing financing" from 15 years to 5 years. Moreover, the percentage of residential units developed by approved real estate developers must increase from 10% to 30% (National Transformation Program 2020, 2016).

Besides the aspired housing vision and goals, challenges are faced in the provision of enough housing units to meet the growing demand, as the population grows in urban cities, and PPPs can be a proper solution to this issue. By understanding which barriers hinder the use of PPPs, decision makers will be able to understand the challenges faced by the private sector and provide solutions and enablers to increase the supply of housing units by developing the right frameworks of PPPs that suit all the parties.

Although two projects were found in the literature that implemented PPP agreements, but still the concept is relatively new in the Kingdom. Thus, between the current issues in the Saudi housing market, and the goals of Vision 2030 of Saudi Arabia, exists a research gap in understanding the barriers that hinder the implementation of PPPs in general and the use of this solution to satisfy the housing needs.

1.6 Limitations of the Research

a) This research is limited to real estate developers in Saudi Arabia
b) This research is limited to real estate developers in the eastern province of Saudi Arabia.

1.7 Thesis Layout

This thesis report is organized as follow:

Chapter 1: Introduction

This chapter introduces the topic of housing in Saudi Arabia and addresses the need to conduct this research. Also, the significance, objectives and expected outcome of this research are addressed in this chapter.

Chapter 2: Literature Review

This chapter introduces the concept of Public-Private-Partnerships and reviews the literature from different aspects about this type of contracts. The chapter mainly focuses on the barriers found in the literature about the use of PPPs in general and the use of PPPs in housing. Moreover, previous PPP project in Saudi Arabia are included in this chapter.

Chapter 3: Research Methodology

This chapter provides a description of the methodology and the methods used to meet the objectives of this research. This includes the following: data collection tool, the targeted population, calculations of the sample size, data collection methods and statistical tools used in data analysis.

Chapter 4: Data Analysis and Results

This chapter explains the analysis done on the data and provides a summary and of the findings. The findings of this research are further elaborated on in the discussion section in this chapter.

Chapter 5: Conclusion and Recommendations

This chapter provides conclusions drawn from the conducted study and provides recommendations and suggestions for future research.

CHAPTER 2

LITERATURE REVIEW

Prior studies examined PPPs in different aspects, with regards to rationales (Ismail & Haris, 2014b); constraints (Ismail & Haris, 2014a); positive and negative influencing factors (Li, Akintoye, Edwards, & Hardcastle, 2005); obstacles and drivers (Liu & Wilkinson, 2011) and critical failure factors (Trangkanont & Charoenngam, 2014). The following sections review studies from different aspects, but the main focus is the barriers to implementation in the context of different countries.

2.1 Definition of Public-Private-Partnerships

In the literature of Public-Private-Partnerships (PPP), exists many definitions that revolve around the same concept of engaging the private sector in providing services that the public sector usually has the responsibility for. In a study to understand the constraints in implementing PPPs in Malaysia, the authors mentioned that PPPs is an alternative procurement method that includes any agreement between the public and private sectors to provide a service to the public, where the responsibility is transferred to the private sector to finance and manage capital investments and services in exchange for receiving payments throughout the concession period (Ismail & Haris, 2014a). Another study by (Alhomadi, 2012) defined PPPs as an alternative procurement method and a project delivery system that was introduced in the early 1990 to assist the public sector in delivering public services. Another study in New Zealand about the adoption of innovative procurement techniques, defined PPPs as contracts that span over a long period of time to deliver public services, by private contractors, where they

finance, build and operate the facility and transfer the control of the facility to the public sector when the contract terminates (Liu & Wilkinson, 2011).

PPP Canada also defined Public-Private-Partnerships as "a long-term performance-based approach to procuring public infrastructure where the private sector assumes a major share of the risks in terms of financing and construction and ensuring effective performance of the infrastructure, from design and planning, to long-term maintenance." (PPP Canada, 2016).

Another Canadian organization, namely The Canadian Council for Public-Private-Partnerships defined PPPs as: "A cooperative venture between the public and private sectors, built on the expertise of each partner, that best meets clearly defined public needs through the appropriate allocation of resources, risks and rewards." (Definitions & Models, 2016)

2.2 Rationales for PPPs in delivering public projects and services

Many studies shed the light on the rationales and importance of implementing PPPs in delivering public projects. In a report published by the Canadian Council for Public-Private-Partnerships the question of why public owners should use PPPs, is answered in six main rationales:

1. To benefit from the experience, efficiency and innovation of the private sector
2. Better integration between parties.
3. Risk transfer to the private sector
4. Financing provided by the private sector
5. Faster projects delivery
6. Lifecycle costs reduction

In a study conducted in Malaysia by (Ismail & Haris, 2014b), found that the top five rationales to use PPP are:

- Involving the private sector in the economic development
- Improving the efficiency of delivery
- Improving the privatization program
- Reduce the government's spending on public services and facilities
- Reduce the role of the government in providing public services and facilities

Also, (Liu & Wilkinson, 2011) identified 7 categories of rationales behind the use of PPPs and named them under: "drivers for PPPs adoption"

- Acceleration of infrastructure provision
- Better risk allocation
- Whole of life cost savings
- Improved quality of services
- Likely to access additional revenue sources
- Benefits for local economic and social development
- Improved project scrutiny

Another study in the UK, by (Carrillo, Robinson, Foale, Anumba, & Bouchlaghem, 2008) where they referred to PPP as the Private Finance Initiative (PFI), highlighted the reasons why the government initiated the PFI, mainly because the private sector can offer:

- Project management
- Innovative designs
- Facilities management services
- Risk management

2.3 Types of PPP agreements

Between the traditional procurement systems where the government contracts out with the private sector to construct projects and the full privatization programs, exist many other agreements that can be considered Public-Private-Partnerships. The Canadian Council for Public-Private-Partnerships stated five types of partnership agreements in Canada:

- Operation & Maintenance Contract (O & M): Where a private entity operates, and maintains a publicly owned asset for a specific period.
- Build-Finance: The private sector provides construction and its associated costs during construction period.
- Design-Build-Finance-Maintain (DBFM): As the name explains, the role of the private sector is to design and build the facility, while providing financing for the project and has the responsibility for providing maintenance.
- Design-Build-Finance-Maintain-Operate (DBFMO): In this type of agreement, the role of the private sector is extended to operate the facility as well. This is usually found in toll roads and infrastructure projects.
- Concession: In this agreement, the private sector takes the project as a private investment for a long-term contract and then the ownership is transferred to the public sector.

(Definitions & Models, 2016)

2.4 Risks involved in PPP agreements

The allocation of resources from both the public and private sectors to meet the objectives of any project is one of the purposes to partner, however, risk also must be shared in a way that can be best handled by the both parties to minimize their probability of occurrence and the impact.

The Canadian Council for Public Private Partnerships defined the relationship between risk and the degree of involvement to be directly proportional. Where the least risky option for the private sector is through the traditional contracting, and the riskiest option is where the private sector assumes the full responsibly for the project under what is known as privatization. The following Figure 2 explains this relationship:

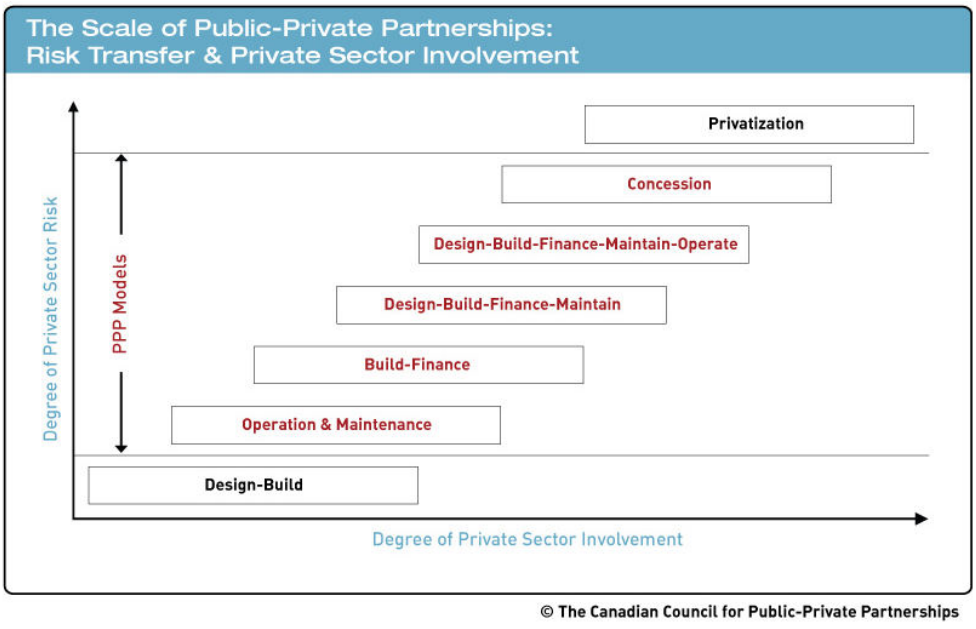

Figure 2: Relationship between private sector involvement and private sector risk

Sklar mentioned 4 general categories of risks involved in PPP agreements. those risks are as follows:

- Business Risks: Those risks include but not limited to: cost overruns because of delays, change orders, low revenue streams. Those risks are better handled by the private partner.
- Financial Risks: Those risks are related to paying the debts (principle and interests) back to lenders, or the risks of changes in exchange rates.
- Political Risks: Those risks are better be dealt with the public partner. They generally include the risks of changes in governmental regulations and laws, that can change the return on investment for the private sector.
- Other Risks: in this category, the author mentioned technological, environmental and force majeure risks.

(Sklar, 2006)

2.5 PPP projects in Saudi Arabia

In studying the PPP implementation in Saudi infrastructure projects, Alhomadi stated that: "It can be concluded that PPP implementations still in the first stage of PPP development, involve designing the partnership policy and legislative framework, acquiring the procurements and contracts right and building the marketplace by encouraging the private sector to bid on these types of contracts." (Alhomadi, 2012). However, there several governmental agencies that developed and used the concepts of PPPs to develop certain projects. The following sections give brief descriptions about two PPP projects in Saudi Arabia.

2.5.1 E-Government PPP program

The E-Government program was initiated by a committee consisted of the Ministry of Finance, Ministry of Communications and Information Technology and the Communications and Information Technology Commission to promote the use of PPPs for governmental agencies in their e-government projects (Alhomadi, 2012). The objective of this project is to be as a reference for guidelines, tools and templates for interested governmental agencies to implement PPPs in e-government projects. The manual was built based on the stages that a PPP projects passes through, which are:

- Inception and applicability of PPP
- Analysis of business aspects
- Procurement, which consists of requests for information and request for proposals
- Negotiations, financing, evaluating and selecting a PPP private partner.
- Contract Management.
- Project Management, including: risk allocation, HR, knowledge and relationship management.
- Auditing
- Management Review, including: corrective actions, their implementation and follow up to closure.
- Termination of contract and lessons learned.

(Alhomadi, 2012)

2.5.2 Prince Mohammad Bin Abdulaziz International Airport in Madinah

Prince Mohammad Bin Abdulaziz International Airport in Madinah is the first PPP airport project in the Middle East (History, 2016). The General Authority of Civil Aviation (GACA) and an international consortium partnered in a PPP agreement under a long-term concession that forms a Build-Transfer-Operate (BTO) type of contract, which is funded with 1.2 billion US dollars by three banks and supervised by the International Finance Corporation (History, 2016). In this type of contract, the private partner – the consortium – assumes the responsibility for construction and operation, while the ownership remains to the GACA.

2.6 Enabling Environment for PPPs

The nature of large-scale and long-term commitment of PPP projects forces investors (the private sector) to scrutinize many aspects of the business environment in which their investments are going to take place at. Benchmarking and self-assessment tools are discussed in this section. These tools are used to assess the enabling environment for PPP projects, which can assist policymakers to pinpoint areas of improvement to create an attractive PPP environment for local and international investors.

2.6.1 Readiness Self-Assessment Tool

The readiness self-assessment tool is a diagnostic tool developed by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) to identify which areas that governments need to improve to engage the private sector in development projects.

The tool is a questionnaire that can be answered by small groups of experts from both sectors, the public and the private sectors, to study the perceptions of both groups of participants and address the differences and commonalities in their opinion.

The following Table 1 is an excerpt of this tool, where participants assign a score to each one of the elements under the illustrated group. The results can then be analyzed using statistical tools to provide an understanding of the investment environment in the country for PPP projects.

Table 1: Exerpt from "Readiness Assessment Tool"

PPP Legal and Regulatory Framework		Very Good	Good	Moderate	Fair	Poor
18	Legal basis for private sector participation	4	3	2	1	0
19	Limited restriction on foreign investors	4	3	2	1	0
20	Clear authority and procedure for acquiring rights of way	4	3	2	1	0
21	Regulatory rules and authority are clear for all PPP types expected	4	3	2	1	0
22	Price and quality of PPP monopolies regulated to protect consumers and others	4	3	2	1	0
23	Environmental laws are clear and transparent and are all available from a single source	4	3	2	1	0

The questionnaire consists of five main categories that have different elements that assess the readiness for a PPP environment. These five categories are:

- **General Background Environment:** This part is about the investment environment in the country, including: macroeconomic, financial and legal environment.
- **PPP Policy Framework and Social and Political Environment:** This part focuses on the purposes to be achieved by the PPP projects.
- **PPP Legal and Regulatory Framework:** The capacity of laws and legal structures to support PPP projects.
- **PPP Institutional Capacity:** How successful the public sector can be in undertaking PPP projects.
- **PPP Process**: Project selection, contracting and post selection

(PPP-Readiness Self-Assessment, 2017)

2.6.2 Benchmarking PPP Procurement

Another useful tool to assess the readiness for using PPP contracts is the " Benchmarking PPP Procurement 2017" report. This report benchmarks capabilities of governments and readiness for procuring PPP projects. According to Fernanda Ruiz Nunez, a senior economist in the World Bank Group: “The report aims to inform decision-making on the design of PPP procurement policies and regulations by comparing economies to recognized good practices that ensure transparency and encourage fair competition.”

(Room for Improvement in How Governments Prepare, Procure and Manage Public-Private Partnerships, 2017)

Moreover, the report examines several elements categorized under four main groups that represent the stages of a PPP project:

- **Preparation:** Evaluating the activities that precede the procurement of PPP projects.
- **Procurement:** Evaluating the selection process of the private partner.
- **Contract management of PPPs:** Examines the existence of PPP contracts management frameworks.
- **Management of unsolicited proposals (USPs):** Examines the existence of an evaluation process for unsolicited proposals for PPP projects.

(Public-Private Partnerships Procurement, 2017)

2.7 Barriers to the implementation of PPPs

Most of the previous studies that examined the barriers aspect of PPPs, have their unique findings because they were conducted across different countries and industries. However, the following sections focus only on the barriers found in the literature, that are related to real estate developers, and make them reluctant to partner with public agencies for developing projects.

2.7.1 Barriers to PPP implementation in housing projects worldwide

There are several studies that examined the implementation of PPPs in developing housing across many countries from different aspects. Most of the studies adopted the case study approach to study existing housing projects under PPP agreements.

In Manitoba, Canada, a study was conducted to investigate the implementation of PPP to provide affordable housing. The findings showed that there are two main barriers that hinder the implementation of PPPs in the provision of housing units:

- The concept of PPP is not very well understood among the private and public sectors.
- The state of Manitoba lacks the political environment to implement PPPs.

(Sklar, 2006)

Another study shows that PPP implementation in India is successful overall in terms of cost reduction – thus affordability – and quality, but not very well in terms of quantity and meeting the demand (Sengupta, 2006). The study identified two barriers that constrained the development of housing units:

- Antiquated legislation
- High levels of municipal taxes, stamp duties and sanction fees.

(Sengupta, 2006)

2.7.2 Barriers to PPP implementation across other industries

Implementation of PPPs proved to be beneficial both to public and government in the development process across different countries. However, the growing interest in PPPs, led scholars to conduct studies specific to their countries studying the barriers to implementation.

In the UK, (Li, Akintoye, Edwards, & Hardcastle, 2005) conducted a study to understand both positive and negative factors that influence the attractiveness of PPPs

implementation. Using an opinion survey methodology, the researchers elicited the relative importance of 13 identified barriers. The top three barriers were: “A great deal of management time in contract transaction, Lengthy delays in negotiation and high participation costs.”

Another study conducted in the UK by (Carrillo, Robinson, Foale, Anumba, & Bouchlaghem, 2008), examined different aspects of PPPs, which are named in the UK as the “Private Finance Initiative (PFI)”. Among these aspects are the barriers of participation in PFI projects. The sample of their research included: client organizations and construction organizations, and each had a different opinion about barriers in terms of importance. For client organizations, the highest-ranking barriers were: “High transaction and bidding costs, complex contracts and lengthy negotiation periods”. While the construction organizations had the same opinion about the first barrier” High transaction and bidding costs” and the third barrier: “lengthy negotiation periods” but differed in the rest: “Track record, and inexperienced staff”.

(Ismail & Haris, 2014a) conducted a study to understand barriers to successful implementation of PPPs in Malaysia, using a survey questionnaire to understand the differences in perceptions of the public and private sectors towards these barriers. The study used the survey of the prior study of (Li, Akintoye, Edwards, & Hardcastle, 2005) and identified the relative importance of the hindrance factors to the Malaysian context. The “lack of government guidelines and procedures on PPP, lengthy delays in negotiation and higher charge to the direct users” were the three most important barriers to a successful implementation of PPPs in Malaysia.

Some researchers studied the barriers of PPPs in specific type of projects, such as that of (Zatar, 2014) where the author studied the barriers of PPPs in toll roads. The study included five limitations of PPPs:

- Increased financing costs, because the cost of borrowing (interest rate) for private companies is higher than governmental entities.
- Greater possibility for unforeseen challenges, because in infrastructure projects, the period of the contract is long, and unforeseen conditions might arise.
- Limits government flexibility, because of the long period of the contract, the funding priorities of the government might be limited.
- New risks from complex procurement process. Complexity and inexperience in PPPs might create new risks
- Fewer bidders, because developer either lack funding or experience in PPP projects (Zatar, 2014).

A study conducted to examine the experience of PPPs in India by (Mahalingam, 2010), classified barriers to PPP implementation to three levels:

- Institutional barriers:

  Where lack of legislation and regulations for PPPs is the main barrier in this area. These barriers result in an increased transaction costs to plan, approve and execute projects.
- Organizational barriers:

  These barriers exist because PPPs in India are new and not well understood in public and private sectors with regards to financial, legal and contractual frameworks, which results in less approvals for PPP projects.

- Project barriers:

  The authors argued that project related issues such as the public disagreement to the increase in tariffs or the introduction of charges to the use of a facility or a service that was offered for free previously. These disagreements exert pressures that can hinder the implementations of PPP project.

One study was found that relates barriers of PPPs to housing in Thailand conducted by (Trangkanont & Charoenngam, 2014). The purpose of the study was to investigate why PPPs failed to deliver low-cost housing units to low-income citizens. The study identified 10 failure factors that did not achieve the result of home ownership by low income citizens, which are: “policy pressure, public client’s ineffective change management, poor bidding documents, inappropriate contractors, public client’s undermined organizational culture and staff’s behavior, LIGs’ difficulties, Political risks, Economic crisis, Relative law and policy risks, The limitations of housing finance.”

2.7.3 Barriers faced by housing developers in Saudi Arabia

Many private and public parties participated in a symposium arranged by the Institute of Public Administration, to diagnose the housing problem in Saudi Arabia and find proper solutions. (Symposium: "Housing in the Kingdom: Challenges and Solutions", 2016). A paper presented by the Ministry of Economy and Planning, discussed the challenges in general, and the barriers to supply and demand of housing units. Barriers to supply found in the paper are mostly related to housing developers, while demand barriers are mostly related to the end-users and factors beyond the capabilities of real

estate developers. So, supply barriers that could face real estate developers are considered only for the scope of this research. These barriers are as follows:

- Increasing cost of development and construction
- Slow and hindering governmental procedures
- Difficulty in obtaining financing for real estate development
- Control of individual real estate developers over 70% of housing real estate market.

(ALjarbou, 2016)

Another paper that studied the financial aspects of the problem, stated the following challenges:

- Increasing costs of construction
- Increasing costs of lands
- The cost of financing from commercial financial institutes
- Absence of incentives to create innovative real estate and financial solutions
- Not enough lands available for development in main cities, with reasonable prices
- Standardization in urban planning and housing and low flexibility for innovation
- Delays in obtaining the required approvals and permits
- Increased costs of labors in construction, maintenance and operation

(Al-Faris, 2016)

2.7.4 Summary of barriers used in the study

The following Table 2 summarizes the barriers used in the study and further explains each one separately.

Table 2: Summary of Barriers Used in the Study

Barriers	Explanation
High participation costs in PPP contracts	Developers might face higher costs in joining a consortium
Higher charge to the direct users	End users might not be able to afford the units, which makes it difficult for the developer to sell them after development
Increasing cost of development and construction	Overall costs of development, including materials, equipment, labor, financing the project, set up costs, overhead costs...etc.
Increasing costs of construction materials	How would the costs of material influence the decision to participate in a PPP agreement
Increasing costs of lands	This barrier includes all lands within the city, both developed and white lands
Increased costs of labors in construction, maintenance and operation	How would an increase in the costs of labors affect the developer's decision to participate in a PPP agreement
Delays in obtaining the required approvals and permits	The period between signing a contract for a project and obtaining all the permits and approvals to start the work
Standardization in urban planning and housing and low flexibility for innovation	Low flexibility for changing the designs and specifications of the housing units
Slow and hindering governmental procedures	Governmental procedures that might hinder the flow of the work, like obtaining permits, approvals, utilities and payments
Lack of government guidelines and procedures on PPP	Clear guidelines and contracts of different PPP frameworks
Public client's ineffective change management	Willingness of the public partner in a PPP agreement to adopt different methods and contracts to develop a project

Poor bidding documents	How would the bidding documents affect the decision to participate in a PPP agreement
Laws and policies risks with regards to project delay compensation	Risks associated with the delay compensation that the developer pays if he doesn't finish the project on time
Lengthy delays in negotiation	Negotiations that precede signing the contract
Complex contracts	Complex contracts that might lead to inappropriate risk sharing
Too much management time in contract transaction	The period between signing an agreement and starting the work
Lack of experience in PPP projects	Lack of experience might translate to risky and uncertain contracts, taking into consideration the lengthy period of such contracts
Inappropriate contractors	Lacking the skills and resources to perform the work
Economic crisis and instability	The effect of the economic situation to participate in a PPP agreement
Material price volatility	The risk of fluctuations in material prices
Low income groups difficulties (end users)	The affordability of end-users to purchase housing units
Low revenue streams from housing projects	Compared to other real estate projects, like commercial projects.
Control of individual real estate developers over most of housing real estate market	The preference of end-users to contract with an individual developer rather than a development company
Not enough lands available for development in main cities	Availability of lands to be developed for housing regardless of the prices
Increased interest rates	High interest rates on the loans for end-users to finance their housing
Limitations of housing finance	Limited number of financing options offered to the end-users
Difficulty in obtaining financing for real estate development	Hindering constraints and conditions that affect the affordability of the end-users
High cost of financing from commercial financial institutes	High costs of loans including: the down payment and the interest on the loans
Absence of incentives to create innovative real estate and financial solutions	How incentivized are developers and financiers to provide solutions to different market segments

CHAPTER 3

Research Methodology

3.1 General

This chapter explains the means by which this research has been carried out. The general methodology followed to meet the objectives of this research is summarized in the following steps:

1. Reviewing the literature related to the subject to benefit from previous research.
2. Developing a questionnaire survey using the selected barriers from literature.
3. Distributing the survey to the targeted population.
4. Collecting and analyzing results using statistical tools.
5. Drawing a conclusion and providing recommendations based on the results of the research.

3.2 Data Collection

A survey questionnaire is the main data collection tool used for this research. The data was collected from the targeted population through two channels: e-mail invitations to a web-based questionnaire and hand-to-hand delivery of paper-based questionnaires.

3.2.1 Survey Description

The survey used to collect data is composed of three parts. Part one is a covering letter to introduce the topic and the purpose of the research to respondents. Part two aims to collect general information about the respondent. The general information included: job title, years of experience, company's classification and if the respondent had any previous experience in developing housing projects or not. Part three aims to collect data about the perceptions of respondents to the severity of the barriers by assigning scores from 1 to 5 to each barrier. This part included 29 barriers that were classified into four groups. These groups are: cost-related barriers, laws and regulations barriers, market-related barriers and financing barriers as shown in Table 3 through Table 6. After each group of barriers, respondents were asked if there are any other barriers related to each group, and if they suggest any enablers to the use of PPPs or any measures that could be taken to overcome the barriers. Moreover, two spaces were designated at the end of the questionnaire to allow for comments and contact information if respondents would like to receive the results of the study.

Table 3: Cost-Related Barriers

	Barrier	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
1	High participation costs	1	2	3	4	5
2	Higher charge to the direct users	1	2	3	4	5
3	Increasing cost of development and construction	1	2	3	4	5
4	Increasing costs of construction materials	1	2	3	4	5

5	Increasing costs of lands	1	2	3	4	5
6	Increased costs of labors in construction, maintenance and operation	1	2	3	4	5

Table 4: Barriers Related to Laws, Regulations and Contracts

	Barrier	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
7	Delays in obtaining the required approvals and permits	1	2	3	4	5
8	Standardization in urban planning and housing and low flexibility for innovation	1	2	3	4	5
9	Slow and hindering governmental procedures	1	2	3	4	5
10	Lack of government guidelines and procedures on PPP	1	2	3	4	5
11	Public client's ineffective change management	1	2	3	4	5
12	Poor bidding documents	1	2	3	4	5
13	Laws and policies risks with regards to project delay compensation	1	2	3	4	5
14	Lengthy delays in negotiation	1	2	3	4	5
15	Complex contracts	1	2	3	4	5
16	Too much management time in contract transaction	1	2	3	4	5

Table 5: Market-Related Barriers

	Barrier	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
17	Lack of experience in PPP projects	1	2	3	4	5
18	Inappropriate contractors	1	2	3	4	5

19	Economic crisis and instability	1	2	3	4	5
20	Material price volatility	1	2	3	4	5
21	Low income groups difficulties (end users)	1	2	3	4	5
22	Low revenue streams	1	2	3	4	5
23	Control of individual real estate developers over most of housing real estate market.	1	2	3	4	5
24	Not enough lands available for development in main cities.	1	2	3	4	5

Table 6: Financing Barriers

	Barrier	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
25	Increased interest rates	1	2	3	4	5
26	Limitations of housing finance	1	2	3	4	5
27	Difficulty in obtaining financing for real estate development	1	2	3	4	5
28	High cost of financing from commercial financial institutes	1	2	3	4	5
29	Absence of incentives to create innovative real estate and financial solutions	1	2	3	4	5

3.3 Population and Sampling

The targeted population of this study has been determined to be all real estate developers in the eastern province of Saudi Arabia, with a total number of 145. To determine the effective sample size, Kish's formula for calculating the sample size has been used as follow (Kish, 1965):

$$n_0 = \frac{pq}{SEM^2} \dots\dots\dots\dots\dots\dots eq1$$

$$n = \frac{n_0}{1 + \frac{n_0}{N}} \dots\dots\dots\dots\dots\dots eq2$$

Where:

$n_0 = the\ first\ estimate\ of\ the\ sample\ size$

$P = the\ proportion\ of\ the\ characteristics\ being\ measured$

$q = 1 - p$

$n = the\ final\ estimate\ of\ the\ sample\ size$

$N = the\ target\ population\ size$

$SEM = the\ maximum\ percentage\ of\ the\ standards\ error\ allowed\ for\ the\ sample\ mean.$

By substituting 0.5 for *p* in *eq1*, *q* becomes 0.5. And assuming SEM=10% gives a value of 25 as the first estimate of the sample size (n_0). Plugging this number into the *eq2* and substituting the population (*N*) of the total number of real estate

developers which is 145, we find the sample size to be 21. However, the resulted sample size is small and the sample is determined to be 30 developers.

3.4Collection Methods

The primary method of collecting data was supposed to be by e-mail, after collecting all contact information of the developers from Asharqia Chamber of Commerce. A web-based survey was developed and a link was provided in the emails, following a covering letter explaining the purpose of the study. Emails were sent to 50 participants of relevant positions to fill out the survey. Surprisingly, no responses were received from the first emails. Another reminder email was sent to encourage participants to fill out the survey, but resulted with only 2 responses, which necessitated using a different approach for data collection. So, respondents were contacted by telephone to ask them if they could provide data over the phone or if they can provide their e-mail addresses to send them the web-based survey. However, that was a second failed attempt to collect data, resulting in 0 responses. Finally, it was determined that the only way to gather the required number of responses was through visits to the respondents' offices and delivering the questionnaires hand-to-hand or conducting it as an interview. That approach was successful and the remaining responses were collected this way. Referring to Table 7 none of the respondents responded to telephone calls, 2 responses were collected through emails and 29 responses were collected through hand-to-hand delivery, which resulted to a total of 31 responses.

Table 7: Data Collection Channels

	Telephone	e-mail	Hand-to-hand
Total	9	50	59
Responses	0	2	29

3.5Statistical Tools

The collected data from the survey is used to measure the following:

1. The severity of the listed barriers on the successful implementation of PPPs in developing housing projects.
2. Rankings of the barriers in each group, overall ranking of all barriers and ranking of each group of barriers.
3. Correlations between barriers, including the strength and the direction of the relationship.

These goals were achieved by analyzing the gathered data using the following statistical tools:

1. Evaluating the agreement between respondents, utilizing descriptive statistics.
2. Likert items are used to obtain the scores for the severity index
3. Assigning a severity index for the barriers and their corresponding groups for ranking.
4. Correlation analysis to discover the relationship between the barriers

The severity levels of the barriers were distributed in five categories, assigning five to the extremely severe and one for not severe. The values assigned to the importance levels were as follows:

- Extremely severe: the assigned weight of 5;
- Very severe: the assigned weight of 4;
- Severe: the assigned weight of 3;
- Somewhat severe: the assigned weight of 2; and
- Not severe: the assigned weight of 1.

CHAPTER 4

Data Analysis and Results

4.1 General

The collected data from the questionnaire surveys was analyzed using two computer software: Microsoft Excel and IBM SPSS. Three data analysis methods were used: descriptive statistics, ranking of barriers and correlations.

The following sections present a description of the collected data, the adopted analysis methods and the results of the analysis.

4.2 Statistical analysis methods

4.2.1 Descriptive Statistics

Descriptive statistics were used to describe the basic feature of the data. That included the mean, standard deviation and coefficient of variation for each one of the 29 barriers. These statistical techniques measured the homogeneity of answers as well as the dispersion.

Weighted Mean

The weighted mean is used to measure the average value of the severity that was assigned to a certain barrier. This value provides a quick understanding of how severe a barrier is on a scale from 1 to 5, based on the responses. The following *eq3* is used to calculate the mean:

$$Weighted\ Mean = \sum a\ (n/N) \ldots\ldots\ldots\ldots\ldots\ldots eq3$$

Where *a* represents the numerical value assigned to each severity level (which ranges from 1 for not severe to 5 for extremely severe); *n* represents the frequency of responses, and *N*, the total number of responses.

Standard deviation

The standard deviation was calculated to measure the spread of the values of the dataset around the mean. The value of the standard deviation is used to quantify the variation and dispersion of the data. The following equation 4 was used to calculate the standard deviation, denoted by σ:

$$\sigma = \sqrt{\frac{1}{N}\sum_{i=1}^{N}(x_i - \bar{x})^2} \ldots\ldots\ldots\ldots\ldots\ldots eq4$$

Where x_i represents each value of the dataset, $\bar{x}$ represents the mean, and N represents the total number of responses.

Coefficient of variation

Coefficient of Variation (CV), also known as, Relative Standard Deviation (RSD), is the ratio of the value of standard deviation to the value of the mean. Like the standard deviation, it also represents the dispersion of the data around the mean. However, it shows the relative variation to the mean, while interpreting the values of the standard deviation alone might be misleading if there are fluctuations in the values of the mean. The following equation 5 was used to calculate the coefficient of variation:

$$\text{CV} = \frac{SD}{\bar{x}} \times 100 \ldots\ldots\ldots\ldots\ldots\ldots eq5$$

Where SD represents the value of the standard deviation and $\bar{x}$ represents the value of the mean.

4.2.2 Severity Index

The severity of barriers preventing the use of Public-Private-Partnerships were calculated by developing a severity index (SI). The severity levels of the barriers were divided into 5 categories and were assigned numerical values ranging from 1 to 5 that reflect their weight. Equation 6 represents the formula used to rank the barriers based on the measure of severity.

$$\text{Severity Index (SI) (\%)} = \sum a(\text{n/N}) \times 100/5 \ldots\ldots\ldots\ldots\ldots\ldots eq6$$

Where *a* represents the numerical value assigned to each severity level (which ranges from 1 for not severe to 5 for extremely severe); *n* represents the frequency of responses, and *N*, the total number of responses.

Also, the severity of each group of barriers was calculated according to equation 7. This formula also represents the average value of the severity index for the barriers under each group.

$$\text{Group Severity Index (GSI) (\%)} = \sum_{i=1}^{n} \frac{x_i}{n} \ldots\ldots\ldots\ldots\ldots\ldots eq7$$

Where x_i is the value of the severity index for each barrier, and *n* represents the number of barriers under each group.

4.2.3 Correlation Analysis

The existence of correlations between barriers was examined by conducting a correlation analysis by the means of spearman's correlation test. Spearman's correlation test is used to explore the existence of a monotonic relationship between barriers.

The value of spearman's correlation coefficient (r_s) ranges from -1 to 1, and measures the strength and direction of the relationship between two variables. Where a value of -1 represents a perfect negative monotonic correlation, a value of 1 represents a perfect positive monotonic correlation and a value of 0 indicates that there is no correlation between the variables. Figure 3 illustrates the correlations of different samples and their corresponding (r_s) values. (Resources: Spearman's correlation, 2017)

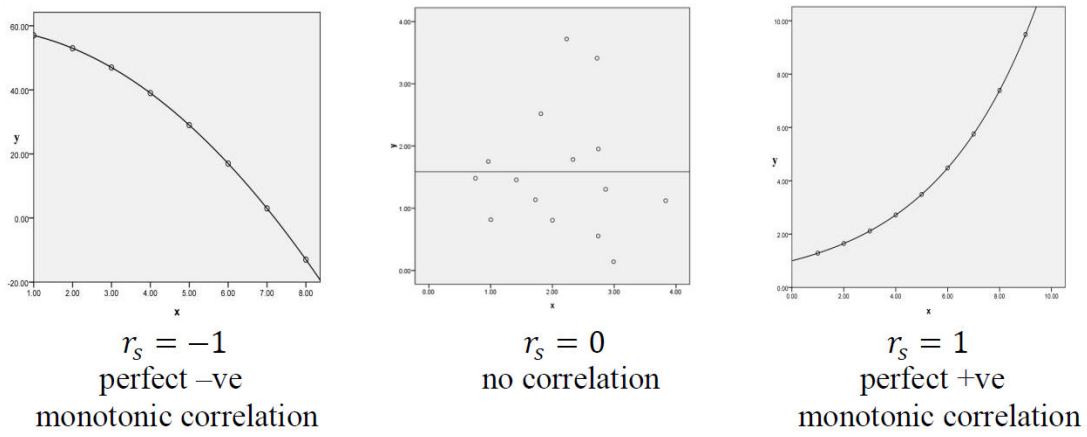

Figure 3: Spearman's Correlation Values

4.3 Demography analysis: General Information

The first part of the survey consisted of general questions about the respondents with regards to their years of experience, job titles, and whether they had a previous experience in developing housing projects or not. This part was essential to filter out any questionnaires filled out with irrelevant and unqualified respondents.

4.3.1 Surveyed population

The surveyed population was determined to be all the real estate developers in the eastern province of Saudi Arabia, whether they had a previous experience in developing housing projects or not. Moreover, the respondents were in managerial positions and must have at least 5 years of experience. This condition was necessary to assure the relevancy and the high quality of responses.

4.3.2 Job titles and Years of Experience

Respondents had different job titles based on their role at their organization. However, most of the surveyed population had managerial job titles, and were in a role at the company where they could make or influence decisions in investing in real estate projects. Table 8 shows job titles, the corresponding years of experience and whether the respondent had a previous experience in developing housing projects or not.

Table 8: Job Titles and Experience

Job Title	Years of Experience	Previous Experience in Developing Housing Projects
Project Manager	30	yes
Director of Marketing	26	yes
Procurement Manager	24	yes
Director of Evaluation	21	yes
Project Manager	17	yes
Real Estate Investment manager	17	yes
Director of the Research Department	17	yes
Marketing Manager	16	yes
Legal Advisor	16	yes
Director of Properties Management	15	no
Chief Executive Officer (CEO)	15	yes
Chief Executive Officer (CEO)	15	yes
National director	15	yes
Sales Manager	14	yes
Chairman	14	yes

Housing Development Manager	13	yes
Chief Investment Officer (CIO)	13	no
Marketing Manager	13	yes
Vice President (VP)	12	yes
Investment Officer	10	yes
Commercial Development Manager	9	yes
Marketing Manager	9	no
Project Manager	9	yes
Chief Investment Officer (CIO)	9	yes
Business Development Manager	7	yes
Financial Analyst	5	no
Investment Analyst	5	no
HR Specialist	5	no
Contracts Manager	5	no
Real Estate Consultant	5	yes
Investment Analyst	5	no

4.3.3 Response rate

The major challenge faced while conducting this research is the data collection part. Compared to the total number of surveys delivered, only few agreed to participate in filling the questionnaire survey. The total number of responses was 31, which is more than the required sample size that was generated by Kish formula, which was calculated to be 21. More details with regards to sampling is provided earlier in section 3.3 of this report. Also, Table 7 in section 3.4 shows the data collection channels and response rates for each channel. Moreover, the tables in Appendix C show the frequency of responses under each group of barriers in the survey questionnaire.

4.4 Results

The results of the three statistical analyses: descriptive statistics, ranking of barriers and correlation analysis, were generated by the aforementioned computer software. In the following sections, the results are shown in summaries, and the detailed reports of the analyses are provided in the appendices.

4.4.1 Descriptive statistics

Descriptive statistics are a set of coefficients used to describe and summarize the data in a simple and meaningful way. The weighted mean was calculated to measure the central tendency of the data, while the standard deviation and coefficient of variation, were calculated to measure the variability of the data. Table 9 represents the computation of the weighted mean, standard deviation and coefficient of variation for each one of the 29 barriers.

Table 9: Descriptive Statistics

	Barriers	Weighted Mean	Std. Deviation	COV
1	High participation costs in PPP contracts	2.32	1.249	53.76
2	Higher charge to the direct users	2.74	1.210	44.14
3	Increasing cost of development and construction	3.03	1.329	43.82
4	Increasing costs of construction materials	2.58	1.285	49.80
5	Increasing costs of lands	3.68	1.469	39.96
6	Increased costs of labors in construction, maintenance and operation	2.48	1.151	46.34
7	Delays in obtaining the required approvals and permits	3.84	1.186	30.89
8	Standardization in urban planning and housing and low flexibility for innovation	3.52	1.151	32.73
9	Slow and hindering governmental procedures	3.55	1.457	41.06
10	Lack of government guidelines and procedures on PPP	3.19	1.250	39.13
11	Public client's ineffective change management	2.84	1.267	44.65
12	Poor bidding documents	2.77	1.407	50.73
13	Laws and policies risks with regards to project delay compensation	3.23	1.203	37.29
14	Lengthy delays in negotiation	3.26	1.064	32.64
15	Complex contracts	3.06	1.315	42.91
16	Too much management time in contract transaction	2.97	1.197	40.33
17	Lack of experience in PPP projects	2.94	1.153	39.27
18	Inappropriate contractors	2.77	1.175	42.35
19	Economic crisis and instability	3.45	1.261	36.52
20	Material price volatility	2.77	1.023	36.89
21	Low income groups difficulties (end users)	3.65	1.253	34.37
22	Low revenue streams from housing projects	2.87	1.408	49.05
23	Control of individual real estate developers over most of housing real estate market	2.45	1.121	45.71
24	Not enough lands available for development in main cities	2.35	1.380	58.58
25	Increased interest rates	3.19	1.276	39.95

26	Limitations of housing finance	3.39	1.256	37.09
27	Difficulty in obtaining financing for real estate development	3.29	1.131	34.38
28	High cost of financing from commercial financial institutes	3.58	1.177	32.87
29	Absence of incentives to create innovative real estate and financial solutions	3.42	1.205	35.24

The weighted mean values ranged from 2.32 to 3.84, with an average of value of 3.08. This indicates that most of the barriers were perceived to be severe, and, thus, severely affect the use of PPPs in developing housing projects from the perspective of the developers.

The standard deviation values in Table 9 range from 1.023 to 1.469, with an average of 1.242, which indicates that most of the data is close to the weighted mean. Also, the visual representation of the scatter diagram in Figure 4 that represents the standard deviation versus the weighted mean, indicates that the data has low dispersion and good compactness, i.e. consistency and agreement between responses. This result indicates that there's an agreement between developers upon the severity levels of barriers, which, clarifies, that all the barriers presented in this study are perceived to be severe. Table 9 also shows that the values of coefficient of variation vary from 30.89 to 53.76. The scattered diagram of COV versus the weighted mean shown in Figure 5 shows that as the mean increases, the COV decreases, which means that there's an agreement between respondents upon the barriers with high severity values. These two figures clarify to policymakers that, to foster an enabling environment for developers to adopt PPP models for housing projects, these barriers should be dealt with, especially barriers with the highest severity – ranked in section 4.4.2 - as there's a general agreement upon them.

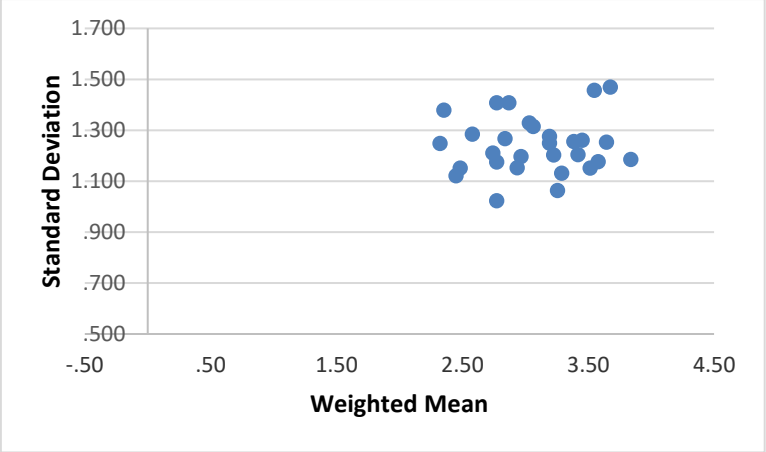

Figure 4: Standard Deviation vs. Weighted Mean

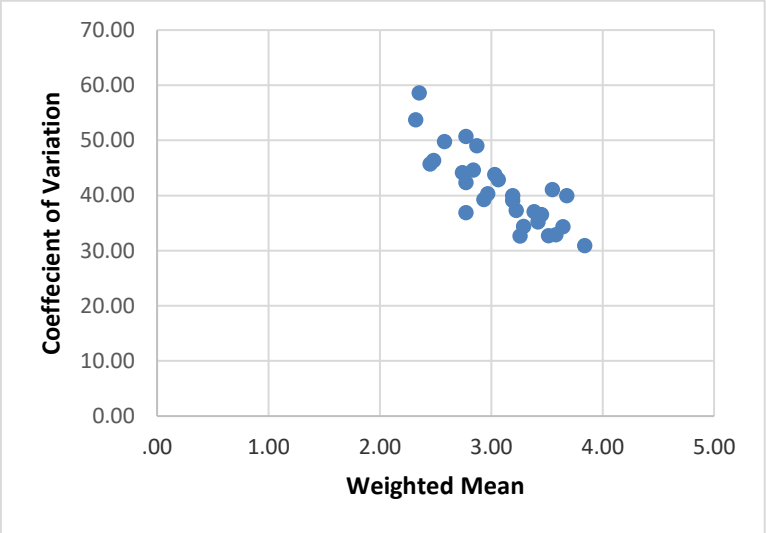

Figure 5: Coefficient of Variation vs. Weighted Mean

4.4.2 Ranking of barriers

The ranking of the barriers was achieved by applying the severity index formula. To better understand the severity of the barriers, ranking is carried out in three ways in the following sections. First, the severity index was calculated for barriers under each group to rank them within their corresponding groups. Second, an overall ranking of the barriers took place using the index on all the barriers together. Third, a group index was calculated to rank the groups based on the severity of their underlying barriers.

4.4.2.1 ***Ranking of factors under each group***

Table 10 shows the rankings of barriers under cost-related barriers group based on their corresponding severity index. The SI values of this group range from 46.45% to 73.55%. The three most severe barriers were the *high costs of lands, increasing costs of development and construction* and *the higher charge to direct users.*

Table 11 shows the rankings and severity of barriers under regulatory barriers group. The SI values of this group range from 54.84% to 76.77%. The most severe barriers identified were the *delays in obtaining the required approvals and permits, slow and hindering governmental procedures* and *the standardization in urban planning and housing and low flexibility for innovation.*

Table 12 shows the rankings and severity of market-related barriers group. The SI values of this group range from 47.10% to 72.90%. The three most severe barriers identified were *low income groups difficulties*, *economic crisis and instability* and *lack of experience in PPP projects.*

Table 13 shows the rankings and severity of the last group of barriers, financing-related barriers. The SI values of this group range from 63.87% to 71.61%. The most severe barriers in this group were the *high cost of housing finance from commercial financial institutes*, *absence of incentives to create real estate and financial solutions* and *limitations in housing financing.*

Table 10: Ranks of Cost-Related Barriers

Barriers	SI (%)	Rank
High costs of lands	73.55	1
Increasing cost of development and construction	60.65	2
Higher charge to the direct users	54.84	3
Increasing costs of construction materials	50.97	4
Increased costs of labors in construction, maintenance and operation	49.68	5
High participation costs in PPP contracts	46.45	6

Table 11: Ranks of Barriers Under Laws, Regulation and Contracts Group

Barriers	SI (%)	Rank
Delays in obtaining the required approvals and permits	76.77	1
Slow and hindering governmental procedures	70.97	2
Standardization in urban planning and housing and low flexibility for innovation	70.32	3
Lengthy delays in negotiation	65.16	4
Laws and policies risks with regards to project delay compensation	64.52	5
Lack of government guidelines and procedures on PPP	63.87	6
Complex contracts	61.29	7
Too much management time in contract transaction	59.35	8
Public client's ineffective change management	56.77	9
Poor bidding documents	54.84	10

Table 12: Ranks of Market-Related Barriers

Barriers	SI (%)	Rank
Low income groups difficulties (end users)	72.90	1
Economic crisis and instability	69.03	2
Lack of experience in PPP projects	58.71	3
Low revenue streams from housing projects	57.42	4
Inappropriate contractors	55.48	5
Material price volatility	55.48	6
Control of individual real estate developers over most of housing real estate market	49.03	7
Not enough lands available for development in main cities	47.10	8

Table 13: Ranks of Financing Barriers

Barriers	SI (%)	Rank
High cost of financing from commercial financial institutes	71.61	1
Absence of incentives to create innovative real estate and financial solutions	68.39	2
Limitations of housing finance	67.74	3

Difficulty in obtaining financing for real estate development	65.81	4
Increased interest rates	63.87	5

4.4.2.2 Overall ranking of barriers

The severity index and the ranking of all the barriers combined, regardless of their corresponding groups, are shown in Table 14, and the top five barriers were:

1. Delays in obtaining the required approvals and permits
2. Increasing costs of lands
3. Low income group difficulties
4. High cost of financing from commercial financial institutes
5. Slow and hindering governmental procedures

Table 14: Rankings of All Barriers

Barriers	SI (%)	Rank
Delays in obtaining the required approvals and permits	76.77	1
Increasing costs of lands	73.55	2
Low income groups difficulties (end users)	72.90	3
High cost of financing from commercial financial institutes	71.61	4
Slow and hindering governmental procedures	70.97	5
Standardization in urban planning and housing and low flexibility for innovation	70.32	6
Economic crisis and instability	69.03	7
Absence of incentives to create innovative real estate and financial solutions	68.39	8
Limitations of housing finance	67.74	9
Difficulty in obtaining financing for real estate development	65.81	10
Lengthy delays in negotiation	65.16	11
Laws and policies risks with regards to project delay compensation	64.52	12
Lack of government guidelines and procedures on PPP	63.87	13
Increased interest rates	63.87	14
Complex contracts	61.29	15
Increasing cost of development and construction	60.65	16
Too much management time in contract transaction	59.35	17
Lack of experience in PPP projects	58.71	18
Low revenue streams from housing projects	57.42	19

Public client's ineffective change management	56.77	20
Inappropriate contractors	55.48	21
Material price volatility	55.48	22
Higher charge to the direct users	54.84	23
Poor bidding documents	54.84	24
Increasing costs of construction materials	50.97	25
Increased costs of labors in construction, maintenance and operation	49.68	26
Control of individual real estate developers over most of housing real estate market	49.03	27
Not enough lands available for development in main cities	47.10	28
High participation costs in PPP contracts	46.45	29

4.4.2.3 Groups Ranking

Table 15 presents the rankings and the average value of the severity index to each group of barriers based on their corresponding barriers. It is shown that financing related barriers group has the highest rank, followed by regulatory barriers.

Table 15: Groups Ranking

Main Group	Avg. SI (%)	Rank
Financing-related Barriers	67.48	1
Regulatory barriers	64.39	2
Market-related Barriers	58.15	3
Cost Related Barriers	56.02	4

4.4.3 Correlation Analysis

The barriers to implementation of PPP in developing housing projects were further analyzed using spearman's correlation test. The test generated a 29 × 29 matrix that shows the strength and direction of relationships between the barriers. The output of the test generated two coefficients that describe the relationship between each two barriers, the correlation coefficient and the statistical significance level. The correlation coefficient describes the strength of the relationship and the direction, by either a

positive or negative sign. A positive sign indicated a proportional relationship between the two barriers, while a negative sign indicated an inversely proportional relationship.

Most of the barriers within one group, highly correlated with one another. However, since the generated 29 × 29 matrix cannot be included in this report, it is further divided into smaller matrices, where correlations of each group of barriers with the other three groups is shown. Correlation between each group of barriers with itself is excluded because most of the barriers within a group had high correlations and the relationship was predictable as most of respondents tended to assign similar scores to barriers within each group, because they were thought to be related to each other. That reduced the number of matrices to 16 to conform with the format of this report, that are included in Appendix D. However, for the sake of representation, only significant correlations of barriers in one group that correlate with barriers of the other three groups were listed in the following Table 16 through Table 19.

Some of the correlations did not imply anything meaningful between two barriers, while some others shed the light on meaningful relationships, that can be interpreted as underlying reasons to, or resulted from the other barrier. For example, the first barrier, *high participation costs in PPP contracts*, highly correlates with *difficulty in obtaining financing for real estate development*, which implies that the difficulty in financing the project results in a higher cost for the developer to participate in a PPP project. While a high correlation like *lack of government guidelines and procedures on PPP* and *material price volatility* does not imply anything that could have meaningful interpretation. So, correlations that don't imply anything meaningful were omitted in the following Table 16 through Table 19, and only meaningful correlations were listed.

Table 16: Correlation between Cost-Related Barriers and Other Groups

	Barriers	Highly correlates with
Cost-Related Barriers	High participation costs in PPP contracts	Delays in obtaining the required approvals and permits
		Difficulty in obtaining financing for real estate development
	Increasing cost of development and construction	Material price volatility
	Increasing costs of construction materials	Material price volatility
	Increasing costs of lands	Low income groups difficulties (end users)

Table 17: Correlation between Laws, Regulations and Contracts Barriers and Other Groups

	Barriers	Highly correlates with
Laws, Regulations and Contract Barriers	Delays in obtaining the required approvals and permits	High participation costs in PPP contracts
	Public client's ineffective change management	Absence of incentives to create innovative real estate and financial solutions
	Too much management time in contract transaction	Inappropriate contractors

Table 18: Correlation Between Market-Related Barriers and Other Groups

	Barriers	Highly correlates with
Market-Related Barriers	Inappropriate contractors	Increasing cost of development and construction
		Increasing costs of construction materials
	Economic crisis and instability	Limitations of housing finance
		Difficulty in obtaining financing for real estate development

		High cost of financing from commercial financial institutes
	Material price volatility	Increasing cost of development and construction
		Increasing costs of construction materials
	Low income groups difficulties (end users)	Increasing costs of lands

Table 19: Correlation between Financing Barriers and Other Groups

	Barriers	Highly correlates with
Financing Barriers	Increased interest rates	Low income groups difficulties (end users)
	Limitations of housing finance	Economic crisis and instability
		Low income groups difficulties (end users)
	Difficulty in obtaining financing for real estate development	High participation costs in PPP contracts
		Economic crisis and instability
		Low income groups difficulties (end users)
	High cost of financing from commercial financial institutes	Economic crisis and instability
	Absence of incentives to create innovative real estate and financial solutions	Delays in obtaining the required approvals and permits
		Public client's ineffective change management
		Inappropriate contractors

4.4.4 Enablers to the use of PPPs in housing projects

After each group of barriers in the questionnaire survey, the respondents were asked to add additional comments or barriers, followed by a question about what enablers or measures can be taken to enable and encourage real estate developers to use PPP in developing housing projects. The number of answers corresponded with the ranking of each group, i.e. the higher the rank of the group, the higher number of answers with regards to enablers to overcome the barriers. The following sections describe what

respondents stated as enablers or measures that can be taken to reduce the effect of the barriers. However, there are some enablers that are being implemented currently by different governmental bodies that help to reduce the effect of some of the highest ranked barriers. These enablers are addressed in the discussion section.

4.4.4.1 Financing Enablers

Financing enablers group had the highest number of responses, with thirteen enablers that could lessen the effect of financing barriers. Five of the thirteen enablers were about removing or reducing the down payment that the end users pay upfront to receive the housing units. Many respondents thought that this enabler would stimulate the residential real estate market, and offer low income groups an affordable residence.

Moreover, the interest on the loans were perceived to be high and unaffordable. Four respondents stated that reducing the interests on residential loans could improve the affordability to low income groups. Also, two respondents stated that the payback period should be increased, while the interests to be decreased.

One respondent suggested that the use of public-private-partnerships to develop housing projects, should include local banks and financial institutions, to offer more financial and residential solutions.

4.4.4.2 Regulatory Enablers

The second group of enablers with regards to the number of responses, is the regulatory enablers, which had seven responses. Four respondents had a similar opinion with regards to coordination between governmental agencies. They suggested that a better coordination would reduce the time and conflicts to issue permits and start the projects

faster. Moreover, one respondent commented that an enabler to real estate developers is to reduce the time consumed in issuing permits required to start a project.

Also, two respondents who had a previous experience in developing housing projects, stated that delay compensation and change orders terms of contracts, are considered as risks towards the developers, that can prevent them to partner in large projects, for long-term contracts, because the concept of partnering must include a proper risk sharing that allocates risks to the parties that can handle them the best, for a relatively long-term period.

4.4.4.3 Cost Enablers

The third group of enablers was the cost enablers, where all the six responses revolved around reducing the costs of lands. All respondents stated that an enabler is to reduce the cost of lands, but stated no further suggestions on how to achieve that.

4.4.4.4 Market Enablers

This group of enablers had only one response, where one respondent stated that a proper use of PPP to develop housing project would be achieved by forming a consortium of real estate developers that work in a coordinated manner to develop residential districts rather than only residential units. The respondent stated that this would reduce conflicts, time to obtain permits and overall costs.

4.5 Discussion

Based on the responses of the real estate developers, financing can be considered the main barrier to the use of PPP to develop housing projects, followed by barriers related to regulations, laws and contracts. Moreover, these two categories of barriers received the highest number of written responses about the enablers or measures that could be taken to lessen their effects. This indicates that these categories of barriers are more significant than the other two, and the use of PPPs to develop housing projects is mostly affected by these categories. To get a thorough insight, the following sections discuss each one of the four groups of barriers with their corresponding enablers separately. Moreover, the current initiatives and enablers that governmental bodies are implementing are also addressed and discussed in their corresponding groups of barriers.

The following Figure 6 illustrates the average value of the severity indices for each group. An examination of the chart indicates that most of the barriers were considered severe and would negatively affect the use of PPPs to develop housing projects.

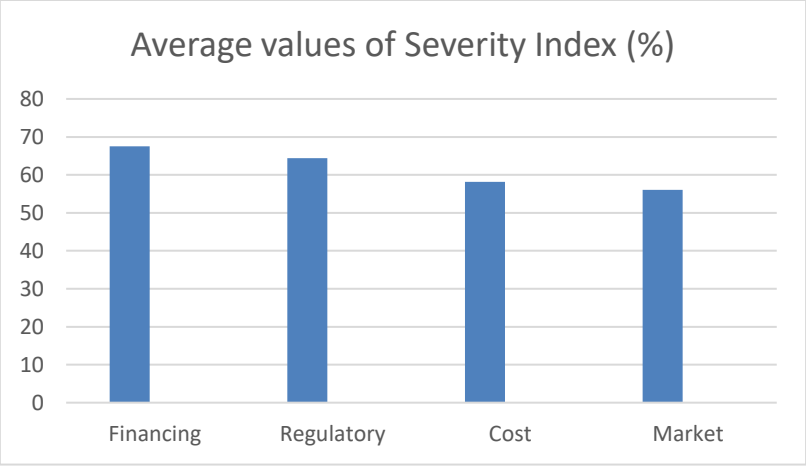

Figure 6: Average Values of Severity Index for Each Group

Figure 7 illustrates the number of enablers or measures that were provided by respondent, that could be taken to lessen the effects of the barriers. It is clear from the chart that the higher the severity of each group, the higher number of enablers suggested.

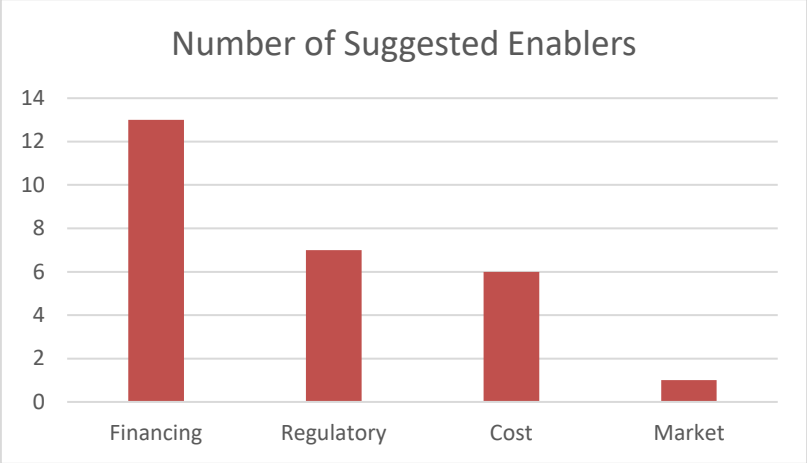

Figure 7: Number of Suggested Enablers

4.5.1 Financing Barriers

The financing barriers group received the highest ranking of the four groups, as well as the highest number of written responses with regards to the enablers to lessen these barriers. This indicated that the end-users are facing difficulties in affording housing units with the current financial options. The top three factors in this group were: *high cost of financing from commercial financial institutes*, *absence of incentives to create innovative real estate and financial solutions* and *limitations of housing finance*.

The first barrier, *high cost of financing from commercial financial institutes*, was perceived to have two components, that were clarified after going through the enablers provided by respondents. The first one, is the value of the down payment, which was perceived to be expensive and affects the developer's decision in developing residential projects, as they would be concerned about the affordability and marketing the units to

the end-users. The second component is the interests on the loans, which is not a fixed value, but during the time of conducting the survey, it was perceived to be a relatively high rate and affects the affordability of such loans.

Most of the responses with regards to PPP enablers, were in this category, financing barriers, and most of them revolved around the cost of the loans. So, the main enabler to the use of PPP in developing housing projects would be developing more affordable financial solutions, especially for low-income groups.

Despite the current support from the Real Estate Development Fund (REDF), that provides loans to citizens, there are current incentives and initiatives to enable citizens to get the required financing from banks and mortgage companies as well. A notable initiative is the subsidized mortgage product that is provided by the Saudi Arabian Monetary Authority (SAMA) that allows citizens to finance real estate dwellings, where the borrower will be responsible for a down payment of 15% of the total value of the property (News, 2017). Before this initiative, the value was 30%, which was unaffordable to many, thus, creating a barrier for the developers to develop housing projects and invest in other profitable real estate projects.

4.5.2 Barriers Related to Regulations, Laws and Contracts

The second ranked group of barriers is the regulatory barriers group, as well as the second largest number of written responses with regards to enablers. This indicated that the developers are facing difficulties with regards to regulations, that might make them reluctant to use a PPP model to develop housing projects. The top three barriers in this category were*: delays in obtaining the required approvals and permits*, *slow and hindering governmental procedures* and *standardization in urban planning and housing and low flexibility for innovation*.

The first barrier received the highest attention and most of the developers suggested that a better coordination between governmental agencies, would reduce the wasted time before starting the projects. So, a proper implementation of PPPs would overcome this problem as more private developers are going to be involved, while the public partner would be responsible for coordination and issuing permits. The current "etmam" center of the Ministry of Housing, was created to solve this problem. This center aims to be the link between housing developers and all the governmental agencies that require permits or documents related to the projects. Some of the services that this center offers to the developers are:

1. Issuing construction permits
2. Approving development plans
3. Approving land zoning plans
4. Issuing permits for marketing selling-on-map (Sell-then-Build) projects
5. Issuing permits for selling selling-on-map projects
6. Issuing completion certificates

(Developers Services Center, 2017)

4.5.3 Market and Cost-Related Barriers

Market and cost-related barriers were less severe than the first two groups of barriers. A notable finding was that the high cost of lands is a major barrier that prevents developers from investing in residential projects. This barrier had also a high correlation with two other barriers: low income groups difficulties and increased interest rates. This also reinforces the previous arguments that the main barriers in using PPPs are the affordability of the final product. i.e. housing units.

An initiative from the government to reduce the increasing rise in the cost of lands, is to impose a tax on white lands, which are empty lands designated for commercial and residential use within the urban growth boundaries (News, 2016). The value of the tax is 2.5 % and is collected through the Ministry of Housing. This tax helps to stimulate the residential real estate market and increase the supply of housing units, which in return reduces the costs of residential properties.

Moreover, most of the market-related barriers highly correlated with cost-related barriers, like the increasing costs of materials and development, and the high costs of lands, followed by financing barriers, like limitation in housing finance, high costs of obtaining finance, including the down payment and the interest rate. These correlations also indicate that the underlying problem is the affordability to the end user, regardless of the factors that inflate the costs.

CHAPTER 5

Conclusion and Recommendations

5.1General

The results derived from the data analysis section revealed several barriers that prevent the implementation of PPPs between developers and public sector agencies to develop housing projects. In addition, enablers that could lessen the effect of these barriers were suggested. Conclusions and recommendation drawn from this study are reported in this chapter.

5.2Conclusion

The intended purpose of this research was to investigate the perceptions of real estate developers about what barriers they might face if a PPP agreement would take place to develop housing projects. The outcomes of this research can be concluded in the following statements:

1. Several barriers were collected from the relevant literature then were grouped into four groups: cost, regulatory, market and financing barriers. These were evaluated by respondents and they were asked to suggest enablers and measures to be taken to lessen the effect of each group of barriers.
2. The data analysis revealed that financing is the main group of barriers that developers face, as they are concerned about the affordability of the end-

users, which makes them reluctant to engage in long-term PPP contracts. The second group of barriers was regulatory barriers, as the time wasted on obtaining all the required permits from different agencies, magnifies the barriers for the developer to engage in PPP contracts.

3. Examination of the suggested enablers and exploring the current initiatives revealed that there are enablers to these barriers currently being implemented by the Ministry of Housing to foster partnerships between the public and the private sector.

5.3 Recommendations

1. Considering the findings of this study, it is recommended that the public sector engages financiers to partner with the real estate developers to develop housing projects under partnerships agreement.
2. It is recommended to reduce the time required to obtain all the permits that developers need to ease the participation of the developers in PPP agreements.
3. It is recommended to suggest more initiatives to reduce costs of lands that could be used for residential purposes.

5.4 Suggestions for Future Research

1. Identification of the barriers to the participation of financier's in PPP contracts from their perspective.
2. Development of a PPP framework that promotes effective, sustainable and comprehensive delivery of housing projects. All the stakeholders involved

in developing housing projects should be included in this framework, with the purpose to serve the growing demand of housing.

3. Identification of the potential risks that could be involved in PPP contracts from both perspectives, the private and the public sectors.
4. Identification of the factors that cause the inflation of lands costs, and what solutions could be provided in that regard.

References

6. Alhomadi, A. A. (2012). *Public-Private Partnership Implementations in Saudi Arabia Infrastructure.* University of Calgary, Department of Civil Engineering. Calgary: Library and Archives Canada.

7. Ismail, S., & Haris, F. A. (2014b). Rationales for public private partnership (PPP) implementation in Malaysia. *Journal of Financial Management of Property and Construction*, Vol. 19 Iss 3 pp. 188 - 201.

8. Liu, T., & Wilkinson, S. (2011). Adopting innovative procurement techniques: Obstacles and drivers for adopting public private partnerships in New Zealand. *Construction Innovation*, Vol. 11 Iss 4 pp. 452 - 469.

9. (2016, November 15). Retrieved from PPP Canada: http://www.p3canada.ca/

10. *About Housing*. (2016, November 16). Retrieved from The Ministry of Housing: https://housing.sa/ar/about-us

11. Al-Faris, A. A. (2016). Role of financial institutions in financing housing programs. *Housing in the Kingdom: Challenges and Solutions.* Riyadh: Insitute of Public Administration.

12. ALjarbou, A. A. (2016). Housing in the Kingdom: Challenges and Solutions. *Housing in the Kingdom: Challenges and Solutions.* Riyadh: Institute of Public Administration.

13. Assaf, S. A., Bubshait, A. A., & Al-Muwasheer, F. (2010). Factors affecting affordable housing cost in Saudi Arabia. *International Journal of Housing*, 290-307.

14. Carrillo, P., Robinson, H., Foale, P., Anumba, C., & Bouchlaghem, D. (2008). Participation, Barriers, and Opportunities in PFI: The United Kingdom Experience. *JOURNAL OF MANAGEMENT IN ENGINEERING*, 24(3): 138-145.

15. *Definitions & Models*. (2016, November 15). Retrieved from The Canadian Council for Public-Private Partnerships: https://www.pppcouncil.ca/web/Knowledge_Centre/What_are_P3s_/Definitions_Models/web/P3_Knowledge_Centre/About_P3s/Definitions_Models.aspx?hkey=79b9874d-4498-46b1-929f-37ce461ab4bc

16. *History*. (2016, November 16). Retrieved from TIBAH airport: http://www.tibahairports.com/en-EN/about-tibah/Pages/history.aspx

17. Ismail, S., & Haris, F. A. (2014a). Constraints in implementing Public Private Partnership (PPP) in Malaysia. *Built Environment Project and Asset Management*, Vol. 4 Iss 3 pp. 238 - 250.

18. Li, B., Akintoye, A., Edwards, P., & Hardcastle, C. (2005). Perceptions of positive and negative factors influencing the attractiveness of PPP/PFI procurement for construction projects in the UK. *Engineering,Construction and Architectural Management*, Vol. 12 Iss 2 pp. 125 - 148.

19. Mahalingam, A. (2010). PPP Experiences in Indian Cities: Barriers, Enablers, and the Way Forward. *Journal of Construction Engineering and Management*, 419-429.

20. (2016). *National Transformation Program 2020.* Kingdom of Saudi Arabia: Saudi Vision 2030.

21. (2016). *Riyadh Real Estate Market Overview.* Riyadh.

22. Sengupta, U. (2006). Government intervention and public–private partnerships in housing delivery in Kolkata. *Habitat International*, 448-461.

23. Sidawi, B. (2014). An evaluation of the performance of the housing finance system in the KSA. *International Journal of Housing Markets and Analysis*, Vol. 7 Iss 2 pp. 156 - 174.

24. Sidawi, B., & Meeran, S. (2011). A framework for providing lifelong finance to the owners of affordable dwellings in the Kingdom of Saudi Arabia. *Cities*, 138–146.

25. Sklar, M. (2006). *Planning to partner: An analysis of public-private partnerships for affordable housing in manitoba.* Winnipeg, Manitoba: University of Manitoba.

26. *Symposium: "Housing in the Kingdom: Challenges and Solutions"*. (2016, November 16). Retrieved from Institute of Public Administration:

http://www.ipa.edu.sa/Arabic/Services/AdvancedProgram/SeminarsMeetings/ho/Pages/default.aspx

27. (2010-2014). *The Ninth Development Plan.* Kingdom of Saudi Arabia: Ministry of Economy and Planning.

28. Trangkanont, S., & Charoenngam, C. (2014). Critical failure factors of public-private partnership low-cost housing program in Thailand. *Engineering, Construction and Architectural Management*, Vol. 21 Iss 4 pp. 421 - 443.

29. (n.d.). *UNDERSTANDING PUBLIC PRIVATE PARTNERSHIPS IN CANADA.* Association of Consulting Engineering Companies.

30. Zatar, M. (2014). *Ptifalls of Public Private Partnerships in Toll Roads.* Arlington: The University of Texas at Arlington.

Appendix A: English Survey Questionnaire

Questionnaire

Dear participant,

This questionnaire is a part of a study titled as "Barriers to Implementation of Public Private Partnerships in Housing Projects in Saudi Arabia: Real Estate Developers' Perspective". This study is a research requirement for the fulfillment of a master's degree in construction engineering and management from King Fahd University of Petroleum and Minerals.

The study focuses on the perceptions of real estate developers towards the barriers of implementing Public-Private-Partnerships in housing projects in Saudi Arabia. This study would provide a deeper understanding of the current challenges faced by practitioners in the industry. In order to the achieve the intended objectives of this research, we are consulting experts within the industry to insure applicability and to obtain better results and conclusions.

The purpose of this letter is to invite you to participate in this by providing the requested information via the attached survey. The questionnaire is short and should not take more than 15 minutes of your valuable time. Your contribution to this study is highly appreciated.

In case you want to be briefed with the results of this study, kindly provide your contact information in the designated space at the end of the survey.

Mohammad Ashmawi,
CEM Department, K.F.U.P.M
Dhahran, Saudi Arabia
Mobile +966598341290
E-mail: g201072620@kfupm.edu.sa

Barriers to implementation of Public-Private-Partnerships in housing projects in Saudi Arabia
Survey Questionnaire

I. General Information

1. Job Position

---

2. Years of Experience

---

3. Company's Classification

---

4. Do you have any previous experience in developing housing projects?

II. Severity of barriers

In the following sections you will be provided with several tables that contain barriers to the successful implementation of Public-Private-Partnerships in housing projects in Saudi Arabia. These barriers are classified in four categories: *Barriers related to contracts, laws and regulations*, *financing-related Barriers*, *Cost-related Barriers and market-related Barriers.*

The instructions below will guide you in completing the table:

1. Please carefully read each one of the barriers provided in each table.
2. Assign a score for each barrier that reflects its severity on a successful implementation of public-private-partnerships to development of housing projects. The higher the score the stronger the barrier.
3. If applicable, add more barriers in each of the four categories, or other barriers in the comments box at the end.
4. Provide any enablers or measures that can be taken to enable the use of PPPs to develop housing projects.

Barriers to implementation of Public-Private-Partnerships in housing projects in Saudi Arabia
Survey Questionnaire

Cost-related Barriers

	Barrier	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
1	High participation costs	1	2	3	4	5
2	Higher charge to the direct users	1	2	3	4	5
3	Increasing cost of development and construction	1	2	3	4	5
4	Increasing costs of construction materials	1	2	3	4	5
5	Increasing costs of lands	1	2	3	4	5
6	Increased costs of labors in construction, maintenance and operation	1	2	3	4	5

Other cost related barriers:

.....

.....

.....

.....

.....

.....

In your opinion, what enablers or measures can be taken to overcome cost-related barriers?

.....

.....

.....

.....

.....

.....

Barriers to implementation of Public-Private-Partnerships in housing projects in Saudi Arabia
Survey Questionnaire

Barriers related to contracts, laws and regulations

	Barrier	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
7	Delays in obtaining the required approvals and permits	1	2	3	4	5
8	Standardization in urban planning and housing and low flexibility for innovation	1	2	3	4	5
9	Slow and hindering governmental procedures	1	2	3	4	5
10	Lack of government guidelines and procedures on PPP	1	2	3	4	5
11	Public client's ineffective change management	1	2	3	4	5
12	Poor bidding documents	1	2	3	4	5
13	Laws and policies risks with regards to project delay compensation	1	2	3	4	5
14	Lengthy delays in negotiation	1	2	3	4	5
15	Complex contracts	1	2	3	4	5
16	Too much management time in contract transaction	1	2	3	4	5

Other barriers related to contracts, laws and regulations:

.....

.....

.....

.....

.....

.....

In your opinion, what enablers or measures can be taken to overcome Barriers related to contracts, laws and regulations?

.....

.....

.....

.....

.....

.....

Barriers to implementation of Public-Private-Partnerships in housing projects in Saudi Arabia
Survey Questionnaire

Market-related Barriers

	Barrier	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
17	Lack of experience in PPP projects	1	2	3	4	5
18	Inappropriate contractors	1	2	3	4	5
19	Economic crisis and instability	1	2	3	4	5
20	Material price volatility	1	2	3	4	5
21	Low income groups difficulties (end users)	1	2	3	4	5
22	Low revenue streams	1	2	3	4	5
23	Control of individual real estate developers over most of housing real estate market.	1	2	3	4	5
24	Not enough lands available for development in main cities.	1	2	3	4	5

Other market related barriers:

.....

.....

.....

.....

.....

.....

In your opinion, what enablers or measures can be taken to overcome market-related barriers?

.....

.....

.....

.....

.....

.....

Barriers to implementation of Public-Private-Partnerships in housing projects in Saudi Arabia
Survey Questionnaire

Financing-related Barriers

	Barrier	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
25	Increased interest rates	1	2	3	4	5
26	Limitations of housing finance	1	2	3	4	5
27	Difficulty in obtaining financing for real estate development	1	2	3	4	5
28	High cost of financing from commercial financial institutes	1	2	3	4	5
29	Absence of incentives to create innovative real estate and financial solutions	1	2	3	4	5

Other financing related barriers:

.....

.....

.....

.....

.....

In your opinion, what enablers or measures can be taken to overcome financing-related barriers?

.....

.....

.....

.....

.....

Please use the following space if you have any comments:

.....

.....

.....

.....

.....

In case you would like to be briefed with the results of this study, kindly provide us with your contact information below:

.....

.....

Appendix B: Arabic Survey Questionnaire

معوقات تطبيق الشراكة بين القطاعين العام والخاص في مشاريع الإسكان في المملكة العربية السعودية: منظور المطورين العقاريين

عزيزي المشارك،

هذا الاستبيان عبارة عن جزء من دراسة بعنوان "معوقات تطبيق الشراكة بين القطاعين العام والخاص في مشاريع الإسكان في المملكة العربية السعودية: منظور المطورين العقاريين." هذه الدراسة عبارة عن بحث كمتطلب للحصول على درجة الماجستير في هندسة وإدارة الإنشاءات، من جامعة الملك فهد للبترول والمعادن.

الدراسة تتمحور حول رأي المطورين العقاريين في المعوقات التي تحدهم من تطبيق الشراكة بين القطاعين العام والخاص لتطوير مشاريع الإسكان في المملكة. هذه الدرسة سوف توفر فهم أعمق للتحديات التي تواجههم في هذه المجال. ولتحقيق أهداف هذا البحث، نقوم باستشارة الخبراء في هذا المجال لضمان جودة النتائج والاستنتاجات.

الهدف من هذه الرسالة هو دعوتكم للمشاركة في هذه الدراسة عن طريق تقديم المعلومات المطلوبة في الاستبيان المرفق. الاستبيان المرفق قصيراً ولن يستغرق أكثر من 15 دقيقة من وقتكم الثمين. إن مساهمتكم في هذه الدراسة في محل تقدير كبير.

في حال رغبتكم في الحصول على نتائج هذه الدراسة، يرجى تزويدنا بمعلوماتكم في المكان المخصص لذلك في نهاية الاستبيان. وفي حالة الرغبة في الحصول على معلومات أخرى، يرجى عدم التردد في التواصل معنا.

محمد عشماوي، مساعد باحث
كلية تصاميم البيئة، جامعة الملك فهد
الظهران، السعودية
الرقم: 0598341290
البريد الإلكتروني : g201072620@kfupm.edu.sa

البروفيسور سعدي عساف
كلية تصاميم البيئة، جامعة الملك فهد
الظهران، السعودية
البريد الإلكتروني: assaf@kfupm.edu.sa

معوقات تطبيق الشراكة بين القطاعين العام والخاص في مشاريع الإسكان في المملكة العربية السعودية
استبيان

أ. معلومات عامة

1. المسمى الوظيفي

---

2. عدد سنوات الخبرة

---

3. تصنيف الشركة

---

4. هل لديكم خبرة مسبقة في تطوير مشاريع الإسكان

ب. درجة تأثير المعوقات

في الأقسام التالية، سوف يتم تزويدكم بعدد من الجداول التي تحتوي على معوقات تطبيق الشراكة بين القطاعين العام والخاص في مشاريع الإسكان في المملكة العربية السعودية. هذه المعوقات مصنفة في أربع مجموعات: معوقات تتعلق بالعقود و القوانين والأنظمة، معوقات التمويل، معوقات تتعلق بالتكلفة، ومعوقات تتعلق بالسوق. التعليمات التالية سوف تساعدكم في تعبئة الاستبيان:

1. الرجاء قراءة كل من المعوقات في الجداول على حدة
2. خصص درجة (1 – 5) لكل بند، لتعكس درجة تأثير المعوقات لتطبيق الشراكة بين القطاع العام والخاص في مشاريع الإسكان. الدرجة الأعلى تعني زيادة التأثير.
3. في حال وجود معوقات غير مذكورة، الرجاء إضافتها في المكان المخصص لها في كل مجموعة أو في آخر الاستبيان في مساحة التعليقات – إن لم تكن مصنفة - .
4. أضف مقومات أو اجراءات يمكن اتخاذها بعد كل مجموعة للتقليل من هذه المعوقات ولتفعيل الشراكة بين القطاعين العام والخاص

معوقات تطبيق الشراكة بين القطاعين العام والخاص في مشاريع الإسكان في المملكة العربية السعودية
استبيان

معوقات متعلقة بالتكلفة

	معوقات الشراكة	قليل التأثير	مؤثر نوعاً ما	مؤثر	كثير التأثير	مؤثر بشكل كبير
1	ارتفاع سعر المشاركة في هذه العقود	1	2	3	4	5
2	ارتفاع الرسوم للمستخدم المباشر	1	2	3	4	5
3	ارتفاع تكلفة التطوير والبناء	1	2	3	4	5
4	ارتفاع أسعار مواد البناء	1	2	3	4	5
5	ارتفاع أسعار الأراضي	1	2	3	4	5
6	ارتفاع سعر العمالة في البناء والصيانة والتشغيل	1	2	3	4	5

معوقات أخرى متعلقة بالتكلفة:

.....

.....

.....

.....

.....

.....

في رأيكم، ما هي المقومات أو الإجراءات التي يمكن اتخاذها للتقليل من المعوقات المتعلقة بالتكلفة ؟

.....

.....

.....

.....

.....

.....

معوقات تطبيق الشراكة بين القطاعين العام والخاص في مشاريع الإسكان في المملكة العربية السعودية
استبيان

معوقات تتعلق بالعقود و القوانين والأنظمة

	معوقات الشراكة	قليل التأثير	مؤثر نوعاً ما	مؤثر	كثير التأثير	مؤثر بشكل كبير
7	التاخير في الحصول على الموافقات والتصاريح المطلوبة	1	2	3	4	5
8	النمطية في تخطيط الأحياء السكنية وقلة المرونة في الابتكارات	1	2	3	4	5
9	بطء الإجراءات الحكومية	1	2	3	4	5
10	عدم وجود إرشادات عامة وإجراءات للشراكة بين القطاعين العام والخاص	1	2	3	4	5
11	عدم كفاءة إدارة التغيير في عميل القطاع العام	1	2	3	4	5
12	وثائق عطاءات رديئة	1	2	3	4	5
13	خطر القوانين والأنظمة المتعلقة بتعويضات تأخير المشاريع	1	2	3	4	5
14	تأخيرات طويلة في المفاوضات	1	2	3	4	5
15	تعقيدات عقود الشراكة	1	2	3	4	5
16	تأخيرات متعلقة بمرحلة انتقال العقود	1	2	3	4	5

معوقات أخرى تتعلق بالعقود و القوانين والأنظمة:

.....

.....

.....

.....

.....

.....

في رأيكم، ما هي المقومات أو الإجراءات التي يمكن اتخاذها للتقليل من المعوقات المتعلقة بالعقود والقوانين والأنظمة ؟

.....

.....

.....

.....

.....

.....

معوقات تطبيق الشراكة بين القطاعين العام والخاص في مشاريع الإسكان في المملكة العربية السعودية
استبيان

معوقات تتعلق بالسوق:

	معوقات الشراكة	قليل التأثير	مؤثر نوعاً ما	مؤثر	كثير التأثير	مؤثر بشكل كبير
17	قلة الخبرة في مشاريع الشراكة بين القطاعين العام والخاص	1	2	3	4	5
18	عدم ملائمة المقاولين	1	2	3	4	5
19	أزمة اقتصادية وعدم استقرار	1	2	3	4	5
20	تقلب في أسعار المواد	1	2	3	4	5
21	انخفاض دخل المستخدم النهائي	1	2	3	4	5
22	قلة مصادر الدخل من مشاريع الاسكان	1	2	3	4	5
23	سيطرة المطورين الأفراد على سوق التطوير العقاري السكني	1	2	3	4	5
24	عدم وجود أراضي كافية للتطوير في المدن الرئيسية	1	2	3	4	5

معوقات أخرى تتعلق بالسوق:

.....

.....

.....

.....

.....

.....

في رأيكم، ما هي المقومات أو الإجراءات التي يمكن اتخاذها للتقليل من المعوقات المتعلقة بالسوق ؟

.....

.....

.....

.....

.....

.....

معوقات تطبيق الشراكة بين القطاعين العام والخاص في مشاريع الإسكان في المملكة العربية السعودية
استبيان

معوقات التمويل:

	معوقات الشراكة	قليل التأثير	مؤثر نوعاً ما	مؤثر	كثير التأثير	مؤثر بشكل كبير
25	ارتفاع معدلات الفائدة	1	2	3	4	5
26	محدودية التمويل العقاري	1	2	3	4	5
27	صعوبة الحصول على التمويل العقاري	1	2	3	4	5
28	ارتفاع تكلفة التمويل من المؤسسات المالية التجارية	1	2	3	4	5
29	غياب المحفزات لإيجاد حلول عقارية وتمويلية	1	2	3	4	5

معوقات أخرى تتعلق بالتمويل:

.....

.....

.....

.....

.....

في رأيكم، ما هي المقومات أو الإجراءات التي يمكن اتخاذها للتقليل من المعوقات المتعلقة بالتمويل ؟

.....

.....

.....

.....

.....

الرجاء استخدام هذه المساحة في حالة الرغبة في إضافة تعليقات:

.....

.....

.....

.....

.....

في حالة الرغبة في الحصول على نتائج هذه الدراسة، يرجى تزويدنا بمعلومات التواصل:

.....

.....

.....

.....

Appendix C: Responses

Cost Related Barriers

	Barriers	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
1	Increasing costs of lands	5	2	3	9	12
2	Increasing cost of development and construction	4	8	8	5	6
3	Higher charge to the direct users	6	7	9	7	2
4	Increasing costs of construction materials	8	4	12	3	3
5	Increased costs of labors in construction, maintenance and operation	7	10	7	6	1
6	High participation costs in PPP contracts	11	6	9	3	2

Barriers related to contracts, laws and regulations

	Barriers	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
7	Delays in obtaining the required approvals and permits	1	4	6	8	12
8	Slow and hindering governmental procedures	4	5	3	8	11
9	Standardization in urban planning and housing and low flexibility for innovation	2	3	10	9	7
10	Lengthy delays in negotiation	0	9	10	7	5
11	Laws and policies risks with regards to project delay compensation	2	7	10	6	6
12	Lack of government guidelines and procedures on PPP	3	6	10	6	6
13	Complex contracts	3	10	6	6	6
14	Too much management time in contract transaction	3	8	12	3	5
15	Public client's ineffective change management	6	6	9	7	3
16	Poor bidding documents	8	4	6	9	3

Market-related Barriers

	Barriers	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
17	Low income groups difficulties (end users)	2	5	4	11	9
18	Economic crisis and instability	2	6	7	8	8
19	Lack of experience in PPP projects	5	4	12	8	2
20	Low revenue streams from housing projects	7	5	10	3	6
21	Inappropriate contractors	5	8	9	7	2
22	Material price volatility	3	9	13	4	2
23	Control of individual real estate developers over most of housing real estate market	8	8	8	7	0
24	Not enough lands available for development in main cities	12	6	6	4	3

Financing-related Barriers

	Barriers	Not Severe	Somehow Severe	Severe	Very Severe	Extremely Severe
25	High cost of financing from commercial financial institutes	2	4	6	12	7
26	Absence of incentives to create innovative real estate and financial solutions	2	6	6	11	6
27	Limitations of housing finance	3	3	12	5	8
28	Difficulty in obtaining financing for real estate development	1	8	8	9	5
29	Increased interest rates	3	7	8	7	6

Appendix D: Correlation Analysis Results

		Cost-Related Barriers					
		High participation costs in PPP contracts	Higher charge to the direct users	Increasing cost of development and construction	Increasing costs of construction materials	Increasing costs of lands	Increased costs of labors in construction, maintenance and operation
Cost-Related Barriers	High participation costs in PPP contracts	1.000	.221	.393*	.056	-.087	.314
		.	.233	.029	.766	.644	.085
	Higher charge to the direct users	.221	1.000	.250	.317	.153	.453*
		.233	0	.175	.082	.412	.011
	Increasing cost of development and construction	.393*	.250	1.000	.658**	.501**	.467**
		.029	.175	.	.000	.004	.008
	Increasing costs of construction materials	.056	.317	.658**	1.000	.497**	.629**
		.766	.082	.000	.	.004	.000
	Increasing costs of lands	-.087	.153	.501**	.497**	1.000	.376*
		.644	.412	.004	.004	.	.037
	Increased costs of labors in construction, maintenance and operation	.314	.453*	.467**	.629**	.376*	1.000
		.085	.011	.008	.000	.037	.

		Regulatory Barriers									
		Delays in obtaining the required approvals and permits	Standardization in urban planning and housing and low flexibility for innovation	Slow and hindering governmental procedures	Lack of government guidelines and procedures on PPP	Public client's ineffective change management	Poor bidding documents	Laws and policies risks with regards to project delay compensation	Lengthy delays in negotiation	Complex contracts	Too much management time in contract transaction
Cost-Related Barriers	High participation costs in PPP contracts	.407*	-.009	.031	-.105	.091	.108	-.128	-.134	.037	.105
		.023	.960	.867	.572	.625	.563	.493	.471	.843	.573
	Higher charge to the direct users	.143	-.051	.103	.269	-.042	-.173	-.096	.001	.089	.007
		.443	.785	.581	.143	.821	.351	.608	.998	.634	.969
	Increasing cost of development and construction	.044	-.417*	-.264	.149	-.013	-.161	-.249	-.280	-.135	-.178
		.815	.020	.151	.424	.946	.388	.177	.128	.468	.338
	Increasing costs of construction materials	-.068	-.317	-.167	.236	-.236	-.303	-.145	-.203	-.096	-.160
		.717	.083	.370	.200	.202	.098	.437	.275	.607	.390
	Increasing costs of lands	.014	-.140	-.088	.208	-.002	.169	-.116	.170	.092	-.126
		.940	.453	.637	.261	.994	.365	.534	.360	.622	.500
	Increased costs of labors in construction, maintenance and operation	.315	.029	.213	.291	.097	-.149	-.183	.004	.017	-.054
		.085	.878	.251	.112	.604	.424	.326	.983	.929	.774

		Market-Related Barriers							
		Lack of experience in PPP projects	Inappropriate contractors	Economic crisis and instability	Material price volatility	Low income groups difficulties (end users)	Low revenue streams from housing projects	Control of individual real estate developers over most of housing real estate market	Not enough lands available for development in main cities
Cost-Related Barriers	**High participation costs in PPP contracts**	.340 .061	-.005 .978	-.233 .207	.031 .868	.099 .595	.213 .250	.409* .022	.229 .215
	Higher charge to the direct users	.137 .462	.277 .132	-.088 .638	.278 .130	.335 .066	-.277 .132	.177 .341	.292 .111
	Increasing cost of development and construction	.125 .505	.496** .005	-.163 .380	.407* .023	.082 .660	-.073 .698	.157 .399	.146 .432
	Increasing costs of construction materials	-.080 .668	.390* .030	-.042 .822	.571** .001	-.051 .784	-.019 .917	.194 .297	.146 .434
	Increasing costs of lands	-.053 .776	.336 .064	.117 .532	.322 .077	.363* .045	.107 .568	.004 .984	.163 .382
	Increased costs of labors in construction, maintenance and operation	-.191 .305	.289 .115	-.144 .440	.313 .086	.236 .200	.149 .425	.222 .231	.121 .516

		Financing-Barriers				
		Increased interest rates	Limitations of housing finance	Difficulty in obtaining financing for real estate development	High cost of financing from commercial financial institutes	Absence of incentives to create innovative real estate and financial solutions
Cost-Related Barriers	**High participation costs in PPP contracts**	.186 .315	-.250 .176	-.377* .036	-.255 .166	.088 .637
	Higher charge to the direct users	.165 .374	-.026 .889	.129 .490	.006 .973	.033 .860
	Increasing cost of development and construction	.210 .256	-.099 .596	.005 .978	.038 .838	.210 .258
	Increasing costs of construction materials	.055 .767	-.014 .939	.016 .933	-.052 .780	.028 .883
	Increasing costs of lands	.423* .018	.277 .132	.298 .103	.206 .266	.212 .252
	Increased costs of labors in construction, maintenance and operation	.392* .029	.228 .217	.175 .347	.237 .199	.194 .296

		Cost-Related Barriers					
		High participation costs in PPP contracts	**Higher charge to the direct users**	**Increasing cost of development and construction**	**Increasing costs of construction materials**	**Increasing costs of lands**	**Increased costs of labors in construction, maintenance and operation**
Regulatory Barriers	Delays in obtaining the required approvals and permits	.407*	.143	.044	-.068	.014	.315
		.023	.443	.815	.717	.940	.085
	Standardization in urban planning and housing and low flexibility for innovation	-.009	-.051	-.417*	-.317	-.140	.029
		.960	.785	.020	.083	.453	.878
	Slow and hindering governmental procedures	.031	.103	-.264	-.167	-.088	.213
		.867	.581	.151	.370	.637	.251
	Lack of government guidelines and procedures on PPP	-.105	.269	.149	.236	.208	.291
		.572	.143	.424	.200	.261	.112
	Public client's ineffective change management	.091	-.042	-.013	-.236	-.002	.097
		.625	.821	.946	.202	.994	.604
	Poor bidding documents	.108	-.173	-.161	-.303	.169	-.149
		.563	.351	.388	.098	.365	.424
	Laws and policies risks with regards to project delay compensation	-.128	-.096	-.249	-.145	-.116	-.183
		.493	.608	.177	.437	.534	.326
	Lengthy delays in negotiation	-.134	.001	-.280	-.203	.170	.004
		.471	.998	.128	.275	.360	.983
	Complex contracts	.037	.089	-.135	-.096	.092	.017
		.843	.634	.468	.607	.622	.929
	Too much management time in contract transaction	.105	.007	-.178	-.160	-.126	-.054
		.573	.969	.338	.390	.500	.774

		Regulatory Barriers									
		Delays in obtaining the required approvals and permits	**Standardization in urban planning and housing and low flexibility for innovation**	**Slow and hindering governmental procedures**	**Lack of government guidelines and procedures on PPP**	**Public client's ineffective change management**	**Poor bidding documents**	**Laws and policies risks with regards to project delay compensation**	**Lengthy delays in negotiation**	**Complex contracts**	**Too much management time in contract transaction**
Regulatory Barriers	Delays in obtaining the required approvals and permits	1.000 .	.442* .013	.805** .000	.444* .012	.327 .072	.351 .053	.268 .145	.380* .035	.348 .055	.363* .045
	Standardization in urban planning and housing and low flexibility for innovation	.442* .013	1.000 .	.493** .005	.267 .147	.458** .010	.262 .155	.357* .049	.559** .001	.479** .006	.516** .003
	Slow and hindering governmental procedures	.805** .000	.493** .005	1.000 .	.428* .016	.244 .185	.299 .103	.368* .042	.493** .005	.324 .075	.363* .044
	Lack of government guidelines and procedures on PPP	.444* .012	.267 .147	.428* .016	1.000 .	.223 .228	.377* .037	.520** .003	.413* .021	.476** .007	.406* .024
	Public client's ineffective change management	.327 .072	.458** .010	.244 .185	.223 .228	1.000 .	.288 .116	.013 .946	.217 .242	.411* .021	.550** .001
	Poor bidding documents	.351 .053	.262 .155	.299 .103	.377* .037	.288 .116	1.000 .	.451* .011	.380* .035	.557** .001	.518** .003
	Laws and policies risks with regards to project delay compensation	.268 .145	.357* .049	.368* .042	.520** .003	.013 .946	.451* .011	1.000 .	.273 .138	.460** .009	.409* .022
	Lengthy delays in negotiation	.380* .035	.559** .001	.493** .005	.413* .021	.217 .242	.380* .035	.273 .138	1.000 .	.495** .005	.381* .034
	Complex contracts	.348 .055	.479** .006	.324 .075	.476** .007	.411* .021	.557** .001	.460** .009	.495** .005	1.000 .	.884** .000
	Too much management time in contract transaction	.363* .045	.516** .003	.363* .044	.406* .024	.550** .001	.518** .003	.409* .022	.381* .034	.884** .000	1.000 .

		Market-Related Barriers							
		Lack of experience in PPP projects	Inappropriate contractors	Economic crisis and instability	Material price volatility	Low income groups difficulties (end users)	Low revenue streams from housing projects	Control of individual real estate developers over most of housing real estate market	Not enough lands available for development in main cities
Regulatory Barriers	Delays in obtaining the required approvals and permits	-.010 .957	-.151 .419	.227 .220	.120 .519	.228 .218	.324 .076	.306 .094	.349 .054
	Standardization in urban planning and housing and low flexibility for innovation	-.099 .595	-.329 .071	.200 .280	-.090 .631	.224 .226	.333 .067	-.017 .927	.266 .148
	Slow and hindering governmental procedures	-.180 .332	-.201 .279	.352 .052	-.080 .667	.216 .242	.104 .579	.121 .518	.319 .081
	Lack of government guidelines and procedures on PPP	-.084 .651	.055 .767	.208 .261	.452* .011	.257 .162	-.039 .833	.045 .809	.087 .643
	Public client's ineffective change management	-.046 .807	.113 .544	-.007 .971	-.374* .038	.375* .038	.213 .249	.060 .750	.207 .265
	Poor bidding documents	.131 .482	-.302 .098	.063 .737	-.127 .494	.075 .689	.075 .689	-.027 .885	.013 .943
	Laws and policies risks with regards to project delay compensation	.027 .886	-.163 .380	.281 .126	.090 .629	-.109 .560	.061 .744	-.104 .579	.097 .603
	Lengthy delays in negotiation	-.353 .051	-.329 .071	.308 .091	.071 .706	.320 .079	.203 .274	-.091 .626	.170 .359
	Complex contracts	-.121 .516	-.314 .086	.170 .360	-.011 .952	.265 .149	.206 .266	.054 .774	.354 .051
	Too much management time in contract transaction	-.172 .355	-.410* .022	.028 .882	-.139 .454	.144 .441	.079 .672	.037 .845	.337 .064

		Financing-Barriers				
		Increased interest rates	Limitations of housing finance	Difficulty in obtaining financing for real estate development	High cost of financing from commercial financial institutes	Absence of incentives to create innovative real estate and financial solutions
Regulatory Barriers	Delays in obtaining the required approvals and permits	.152 .415	.092 .624	.093 .618	.121 .516	.416* .020
	Standardization in urban planning and housing and low flexibility for innovation	.046 .807	.088 .637	.031 .868	.040 .831	.126 .501
	Slow and hindering governmental procedures	.098 .602	.199 .284	.200 .280	.206 .265	.197 .287
	Lack of government guidelines and procedures on PPP	-.086 .646	.046 .804	.249 .177	.205 .269	.089 .634
	Public client's ineffective change management	.004 .983	.308 .092	.377* .037	.079 .672	.655** .000
	Poor bidding documents	-.079 .674	.100 .593	.093 .620	-.112 .547	.028 .882
	Laws and policies risks with regards to project delay compensation	-.371* .040	-.070 .707	.056 .766	.069 .713	-.059 .752
	Lengthy delays in negotiation	.181 .329	.098 .598	.175 .347	.144 .440	.041 .826
	Complex contracts	-.046 .805	.125 .501	.327 .073	-.134 .472	.180 .334
	Too much management time in contract transaction	-.246 .182	-.075 .690	.171 .359	-.338 .063	.156 .402

		Cost-Related Barriers					
		High participation costs in PPP contracts	Higher charge to the direct users	Increasing cost of development and construction	Increasing costs of construction materials	Increasing costs of lands	Increased costs of labors in construction, maintenance and operation
Market-Related Barriers	Lack of experience in PPP projects	.340 .061	.137 .462	.125 .505	-.080 .668	-.053 .776	-.191 .305
	Inappropriate contractors	-.005 .978	.277 .132	.496** .005	.390* .030	.336 .064	.289 .115
	Economic crisis and instability	-.233 .207	-.088 .638	-.163 .380	-.042 .822	.117 .532	-.144 .440
	Material price volatility	.031 .868	.278 .130	.407* .023	.571** .001	.322 .077	.313 .086
	Low income groups difficulties (end users)	.099 .595	.335 .066	.082 .660	-.051 .784	.363* .045	.236 .200
	Low revenue streams from housing projects	.213 .250	-.277 .132	-.073 .698	-.019 .917	.107 .568	.149 .425
	Control of individual real estate developers over most of housing real estate market	.409* .022	.177 .341	.157 .399	.194 .297	.004 .984	.222 .231
	Not enough lands available for development in main cities	.229 .215	.292 .111	.146 .432	.146 .434	.163 .382	.121 .516

		Regulatory Barriers									
		Delays in obtaining the required approvals and permits	**Standardization in urban planning and housing and low flexibility for innovation**	**Slow and hindering governmental procedures**	**Lack of government guidelines and procedures on PPP**	**Public client's ineffective change management**	**Poor bidding documents**	**Laws and policies risks with regards to project delay compensation**	**Lengthy delays in negotiation**	**Complex contracts**	**Too much management time in contract transaction**
Market-Related Barriers	Lack of experience in PPP projects	-.010 .957	-.099 .595	-.180 .332	-.084 .651	-.046 .807	.131 .482	.027 .886	-.353 .051	-.121 .516	-.172 .355
	Inappropriate contractors	-.151 .419	-.329 .071	-.201 .279	.055 .767	.113 .544	-.302 .098	-.163 .380	-.329 .071	-.314 .086	-.410* .022
	Economic crisis and instability	.227 .220	.200 .280	.352 .052	.208 .261	-.007 .971	.063 .737	.281 .126	.308 .091	.170 .360	.028 .882
	Material price volatility	.120 .519	-.090 .631	-.080 .667	.452* .011	-.374* .038	-.127 .494	.090 .629	.071 .706	-.011 .952	-.139 .454
	Low income groups difficulties (end users)	.228 .218	.224 .226	.216 .242	.257 .162	.375* .038	.075 .689	-.109 .560	.320 .079	.265 .149	.144 .441
	Low revenue streams from housing projects	.324 .076	.333 .067	.104 .579	-.039 .833	.213 .249	.075 .689	.061 .744	.203 .274	.206 .266	.079 .672
	Control of individual real estate developers over most of housing real estate market	.306 .094	-.017 .927	.121 .518	.045 .809	.060 .750	-.027 .885	-.104 .579	-.091 .626	.054 .774	.037 .845
	Not enough lands available for development in main cities	.349 .054	.266 .148	.319 .081	.087 .643	.207 .265	.013 .943	.097 .603	.170 .359	.354 .051	.337 .064

		Market-Related Barriers							
		Lack of experience in PPP projects	Inappropriate contractors	Economic crisis and instability	Material price volatility	Low income groups difficulties (end users)	Low revenue streams from housing projects	Control of individual real estate developers over most of housing real estate market	Not enough lands available for development in main cities
Market-Related Barriers	Lack of experience in PPP projects	1.000 .	.452* .011	.172 .355	.069 .713	.188 .312	.082 .661	.291 .113	-.005 .977
	Inappropriate contractors	.452* .011	1.000 .	.154 .409	.268 .146	.229 .215	-.051 .785	.196 .290	.062 .742
	Economic crisis and instability	.172 .355	.154 .409	1.000 .	.221 .233	.509** .003	.164 .378	.146 .433	.352 .052
	Material price volatility	.069 .713	.268 .146	.221 .233	1.000 .	-.018 .923	.076 .683	.197 .287	-.020 .916
	Low income groups difficulties (end users)	.188 .312	.229 .215	.509** .003	-.018 .923	1.000 .	.017 .930	.146 .435	.348 .055
	Low revenue streams from housing projects	.082 .661	-.051 .785	.164 .378	.076 .683	.017 .930	1.000 .	.357* .049	.097 .605
	Control of individual real estate developers over most of housing real estate market	.291 .113	.196 .290	.146 .433	.197 .287	.146 .435	.357* .049	1.000 .	.238 .198
	Not enough lands available for development in main cities	-.005 .977	.062 .742	.352 .052	-.020 .916	.348 .055	.097 .605	.238 .198	1.000 .

		Financing-Barriers				
		Increased interest rates	Limitations of housing finance	Difficulty in obtaining financing for real estate development	High cost of financing from commercial financial institutes	Absence of incentives to create innovative real estate and financial solutions
Market-Related Barriers	Lack of experience in PPP projects	.043 .820	-.021 .911	-.243 .187	-.042 .824	.121 .516
	Inappropriate contractors	.147 .431	.199 .283	.118 .529	.280 .127	.387* .032
	Economic crisis and instability	.225 .224	.469** .008	.387* .032	.425* .017	.116 .536
	Material price volatility	.078 .678	-.145 .438	-.050 .789	.068 .715	-.066 .726
	Low income groups difficulties (end users)	.574** .001	.423* .018	.424* .017	.340 .061	.281 .126
	Low revenue streams from housing projects	.153 .413	.291 .112	.171 .358	.212 .252	.349 .054
	Control of individual real estate developers over most of housing real estate market	-.008 .968	-.169 .364	-.182 .327	-.252 .172	.259 .159
	Not enough lands available for development in main cities	.083 .658	.001 .994	.115 .538	-.075 .689	.092 .622

		Cost-Related Barriers					
		High participation costs in PPP contracts	**Higher charge to the direct users**	**Increasing cost of development and construction**	**Increasing costs of construction materials**	**Increasing costs of lands**	**Increased costs of labors in construction, maintenance and operation**
Financing-Barriers	Increased interest rates	.186 .315	.165 .374	.210 .256	.055 .767	.423* .018	.392* .029
	Limitations of housing finance	-.250 .176	-.026 .889	-.099 .596	-.014 .939	.277 .132	.228 .217
	Difficulty in obtaining financing for real estate development	-.377* .036	.129 .490	.005 .978	.016 .933	.298 .103	.175 .347
	High cost of financing from commercial financial institutes	-.255 .166	.006 .973	.038 .838	-.052 .780	.206 .266	.237 .199
	Absence of incentives to create innovative real estate and financial solutions	.088 .637	.033 .860	.210 .258	.028 .883	.212 .252	.194 .296

		Regulatory Barriers									
		Delays in obtaining the required approvals and permits	**Standardization in urban planning and housing and low flexibility for innovation**	**Slow and hindering governmental procedures**	**Lack of government guidelines and procedures on PPP**	**Public client's ineffective change management**	**Poor bidding documents**	**Laws and policies risks with regards to project delay compensation**	**Lengthy delays in negotiation**	**Complex contracts**	**Too much management time in contract transaction**
Financing-Barriers	Increased interest rates	.152 .415	.046 .807	.098 .602	-.086 .646	.004 .983	-.079 .674	-.371* .040	.181 .329	-.046 .805	-.246 .182
	Limitations of housing finance	.092 .624	.088 .637	.199 .284	.046 .804	.308 .092	.100 .593	-.070 .707	.098 .598	.125 .501	-.075 .690
	Difficulty in obtaining financing for real estate development	.093 .618	.031 .868	.200 .280	.249 .177	.377* .037	.093 .620	.056 .766	.175 .347	.327 .073	.171 .359
	High cost of financing from commercial financial institutes	.121 .516	.040 .831	.206 .265	.205 .269	.079 .672	-.112 .547	.069 .713	.144 .440	-.134 .472	-.338 .063
	Absence of incentives to create innovative real estate and financial solutions	.416* .020	.126 .501	.197 .287	.089 .634	.655** .000	.028 .882	-.059 .752	.041 .826	.180 .334	.156 .402

		Market-Related Barriers							
		Lack of experience in PPP projects	Inappropriate contractors	Economic crisis and instability	Material price volatility	Low income groups difficulties (end users)	Low revenue streams from housing projects	Control of individual real estate developers over most of housing real estate market	Not enough lands available for development in main cities
Financing-Barriers	Increased interest rates	.043 .820	.147 .431	.225 .224	.078 .678	.574** .001	.153 .413	-.008 .968	.083 .658
	Limitations of housing finance	-.021 .911	.199 .283	.469** .008	-.145 .438	.423* .018	.291 .112	-.169 .364	.001 .994
	Difficulty in obtaining financing for real estate development	-.243 .187	.118 .529	.387* .032	-.050 .789	.424* .017	.171 .358	-.182 .327	.115 .538
	High cost of financing from commercial financial institutes	-.042 .824	.280 .127	.425* .017	.068 .715	.340 .061	.212 .252	-.252 .172	-.075 .689
	Absence of incentives to create innovative real estate and financial solutions	.121 .516	.387* .032	.116 .536	-.066 .726	.281 .126	.349 .054	.259 .159	.092 .622

		Financing-Barriers				
		Increased interest rates	Limitations of housing finance	Difficulty in obtaining financing for real estate development	High cost of financing from commercial financial institutes	Absence of incentives to create innovative real estate and financial solutions
Financing-Barriers	Increased interest rates	1.000	.501**	.316	.471**	.122
		.	.004	.083	.007	.515
	Limitations of housing finance	.501**	1.000	.785**	.716**	.372*
		.004	.	.000	.000	.039
	Difficulty in obtaining financing for real estate development	.316	.785**	1.000	.662**	.414*
		.083	.000	.	.000	.021
	High cost of financing from commercial financial institutes	.471**	.716**	.662**	1.000	.301
		.007	.000	.000	.	.100
	Absence of incentives to create innovative real estate and financial solutions	.122	.372*	.414*	.301	1.000
		.515	.039	.021	.100	.

Vitae

Name	:Mohammad Mahmoud Ashmawi
Nationality	:Palestine
Date of Birth	:4/10/1992
Email	:mhdashmawi@hotmail.com
Address	:Riyadh, Saudi Arabia
Academic Background	:B.Sc. Applied Civil and Environmental Engineering