



Reasons of the Difference between both of the Expected and Actual Project Completion Periods A Study of the Performance of Real Estate Development Companies in Riyadh City

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Abstract

Objectives: The main objective of this study is to identify the opinions of companies with regard to the real estate development; how companies manage their projects and what abilities they possess in order to achieve their goals as planned within the deadlines. In addition, the study attempts to find out gaps, based on scientific standards and theories by applying feasibility studies and a project management methodology in terms of planning skills and forecasting schedule to implement projects. **Method:** The study followed an analytical descriptive study method. The methodology that was followed consists of three phases: Data gathering stage, data analysis stage, conclusions and recommendations stage. Using SPSS for data entry and analysis, the study sample consists of 44% from real estate companies and entities, which are registered in the Chamber of Commerce and Industry in Riyadh (27 entities). **Results:** The results showed that 18.5% of the companies were able to achieve a higher accuracy rate between the estimated and actual project times, while 81.5% could not, either with a shorter or longer estimated time. The results showed that there are statistically significant differences related to company age and axis of impact on the market and development. **Conclusion:** The study underlined the importance of knowing the time difference between the estimated time and the actual time to complete projects in real

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estate projects so that the damage to the real estate market can be avoided. The study suggested more future research, such as the extent to which project management in real estate companies can abide by the estimated duration of their projects, the reasons for the inaccuracy of feasibility studies, and the difference in the estimated cost from the actual cost in real estate development projects.

Keywords: Real estate, Development, Project management, Time management, Feasibility studies.

Introduction

Real estate development projects are an essential part of economic development, because of the need for the development of both land and place to proceed and to implement them on the ground. However, real estate development has not matched the growing economic leaps that the Kingdom of Saudi Arabia achieved during the past decades, either qualitatively or quantitatively. This affected and is still affecting the process of development. An example of faltering issues in real estate development is that the value of real estate contributions -which is one of the real estate investment methods- that defaulted in the Kingdom of Saudi Arabia amounted to S.R 12,234 million, with 106 contributions (The Chamber of Commerce and Industry in Riyadh, 2010).

There are many other reasons that the media and other researches and studies addressed, which lead to these negative effects on the real estate development in terms of their faltering and failure to achieve their desired beneficial outcomes, and the accuracy of predicting the dates of their implementation. These reasons include, but are not limited to, governmental organizations, and the extent of professionalism of employees and companies, and the frequent changes made by the project owner and his teamwork, and the accompanying complications in coordination with the service agencies, and other matters mentioned in the questionnaire of this study. Hence, this study will focus only on the aspect of feasibility studies in relation to time and its estimation.

Feasibility studies are one of the most important real estate development stages. It is a critical stage in which the project may either be completed or not due to its extreme importance and impact. Hypothetically, the purpose of all real estate projects is to achieve their required clear objectives according to the resources available and the specified steps and procedures to achieve such objectives within a pre-defined period to which managers of these projects adhere. Time schedules of projects are an intrinsic aspect of feasibility studies. Time is an essential element of the decision to start a project. Thus, feasibility studies do not consider any project that does not successfully pass this time component as a feasible project. Neglecting these feasibility studies or dealing with them in a non-professional method will lead to failure as a natural result thereof (Munsaka, 2012).

Problem Statement

Project miscalculation and consequent failure is a global phenomenon that threatens the development of economies. Most countries, including developed countries, have been affected thereby.

In Saudi Arabia, multiple government agencies are undertaking the responsibility of governmental real estate development projects including Public Works Agency, ARAMCO, and Ministry of Higher Education who managed government projects not related to them because they were selected by decision makers as the most appropriate management to achieve the objectives of these projects within the specified time. Moreover, the private sector applied a number of painful real estate development practices that led to the failure of many of their projects, including real estate joint stocks and real estate development companies and the real estate funds. Most of these projects were impacted in terms of time by miscalculation, bad management, or both.

Time delay is the most important aspect of project defaulting. According to a statistic by Riyadh Development Authority, in 2014, in Riyadh Region only, more than 790 government real estate or related projects with a value in excess of S.R 57 billion have stalled, compared to 850 projects with a value equivalent to S.R 40 billion, that were completed in the same year and in the same region (Riyadh Development Authority, 2014).

All these findings show that the performance of the real estate sector is not compatible with the performance of economic development in general, which reflected positively on per capita income in the Kingdom of Saudi Arabia. In 2004, the gross domestic product of Saudi Arabia was S.R 938 billion and reached approximately S.R 1,758 billion in 2008. This reflected on the average Saudi per capita income during four years (2004-2008) from S.R 41,668 to S.R 70,859, which is almost a double during this short period (Saudi Arabian Monetary Agency [SAMA], 2009). In view of the demand related to residential use, the figures indicated that there is an estimated demand of about one and a half million housing units, of which only 85% is planned to be covered during the tenth development plan (Ministry of Economy and Planning, 2015).

The share of building, construction and real estate services was expected to increase in 2014 during the ninth development plan, with an average annual growth rate of 14%, and a percentage of GDP equivalent to 15.1% (Ministry of Planning and Economy, 2010).

In project risks studies, we found that the most important risks facing projects lie in scope changes. Their average time impact on projects was 8.2 weeks with a high proportionality. These risks were limited to eight main reasons, with their time impact explained. They were listed according to the number of cases of frequency in projects as follows: changes in scope during the project, issues arising from internal recruitment, failure to meet the requirements to be accomplished, the project delays due to factors under the project control,

insufficient time allocated to project activities, issues arising from external recruitment, project delays due to factors beyond the project control, and finally, insufficient project financing (Kendrick, 2009).

Similarly, the projects of the semi-government entities were also affected by the variance between the extent of achieving the projects and the estimated time of their completion. This is despite existing feasibility studies that such projects were approved thereon. In the projects belonging to the General Organization for Social Insurance for example, it became clear that there is a time variance in their projects that were implemented during the past ten years. In the Al-Olaya Towers project, the estimated period was 28 months, and the actual period became 60 months, which is more than twice the estimated period. The Diplomatic Quarter project had a variance of 10%, the Oasis of Granada project had a variance equivalent to 17% of additional time added to the originally estimated period. It is to be noted that the remaining data of other projects were not clear due to lack of documentation of experience. This illustrates the magnitude of the problem of lack of benefitting from previous experience in recent studies because they are not documented in project management files to avoid defects and errors of previous projects. This includes avoiding reasons for the inaccuracy of estimated time compared to the actual time of the previous projects.

The Main Research Question: What is the reason for the difference between the estimated and the actual periods in real estate development projects in the Kingdom of Saudi Arabia?

Research questions include the following sub-questions:

- How much is the difference?
- What are the main reasons for this difference?

The Importance of the Study

This study aims to identify the views of companies, operating in the field of real estate development regarding the reasons that made

the duration of projects implementation differ from planned. This may be due to reasons including lack of feasibility studies or a deficiency in feasibility studies, inability to control and monitor the implementation of projects or lack of sufficient experience of these companies in accurately predicting the timing and duration of project activities.

The importance of the study stems from the need to exploit the resources invested in the real estate sector to serve the economic development in the Kingdom of Saudi Arabia through its appropriate guidance, monitoring and control to achieve the maximum benefit from these resources, especially the financial ones, and to minimize negative results such as default and delay. Moreover, the importance of the study lies in the scientific benefit of providing the correct scientific framework that helps decision-makers, shareholders, administrators, and specialists in the real estate sector in general, in making the right decisions, and raising the professional level of real estate companies with regard to concepts of planning and feasibility studies to avoid miscalculation.

Literature Review

Feasibility studies aim to assess the extent to which a specific project can achieve its desired goal (such as profitability, maximum net value, and maximum added value); based on certain criteria and by using the estimated data for project performance over the estimated operational period. In addition, there are ways to evaluate feasibility studies to identify their validity and the accuracy of their information and outputs, as a measure of their quality.

The sequence of the stages of the feasibility studies, which determine the budget, time and returns from any project is based will be explained. These are several preliminary studies that, when analyzed in full, provide time and investment values for the project, through which we can accept or reject the project.

Graaskamp (1972) believes that for a real estate project to be feasible, there must be a reasonable possibility to achieve clear and specific goals, when specific steps and procedures compatible with the restrictions and limited resources. Therefore, feasibility studies must have these characteristics:

- 1- The feasibility is not certain because it is based on future expectations and readings.
- 2- They are fulfilled by achieving objectives that must be clear and specific before the start of feasibility studies.
- 3- Selection of a specific appropriate approach or method and a performance plan to convert the concept into reality, where time factor is essential.
- 4- The applicability and practicality of results of the adopted methodology or plan has been tested for implementation on the ground according to the project restrictions and its specific resources.

Bamakhrama (1994) states that feasibility studies are of great importance in projects due to their ability to:

- Determine the profitability of the project.
- Assist in making decisions about the best investment options using the resources available to the investors.
- Indicate whether the investment contains huge costs, part of which will be sunken, that is, difficult to recover, such as the costs of specialized machinery and equipment and some types of buildings detailed for specific uses and the costs of equipping the facilities and training, so as to be considered in financial planning.
- Indicate the opportunities to sell or rent the project.
- Facilitate the access to project financing and contributing to reduce financing costs.

- Contribute to determining the optimal structure for project financing, including borrowing, or offering shares, retained earnings or other sources of financing based on the relative weight of each of them in total cost of financing the project (the financing leverage).
- Assist in determining the optimal structure for project costs between fixed and variable costs based on the relative contribution of each to the total cost, and its reflection on project profitability (operational leverage).
- Help to determine the optimum size for the project.
- Facilitate the project performance evaluation process.
- Reduce the risks and to try to plan to avoid or reduce them.

Feasibility studies are essential in most theories of real estate development stages where the stages of development start from the site control stage, then the analysis of feasibility, improvement and testing, and then obtaining permits. The design comes thereafter, followed by financing. In the sixth stage comes the construction and development. The seventh stage includes the marketing and leasing. Finally comes the operational stage (Ling, 2005), which is also an important stage in the classification of Wurtzebach as in their ideal sequence of property development according to the following stages: concept formation, concept refining, feasibility, contractual negotiation, commitment point, construction and development, primary operating, and finally asset management over time (Wurtzebach, 1995).

Feasibility studies are an important part of any business plan, which is an auxiliary means and tool for anticipating future demand and supply, customer quality, evaluating competition and exploring unknown markets. These studies allow detailing a real estate product for the unique needs that customers are searching for (Kone, 2006), and they are decision makers for the investment of different parties, including: The financing agency that considers the feasibility study

as a document that proves the profitability of the project, its efficiency and its ability to repay the financing. In some cases, however, we may find in practice that some projects fail despite preparing a positive feasibility study for them, explaining the extent of the possibility of success of this project. Moreover, some projects have achieved remarkable success even though the feasibility study is weak, and Noordin (2010) argues that there are a number of reasons that contribute to the failure of projects, including:

- The existence of gaps or errors, which were not clear when studying and deciding the project's economic feasibility.
- Evaluating the project during an insufficient period.
- Changing the conditions associated with the project and its surroundings.
- Deviation from the ethical and scientific approach when practicing the activity.
- The existence of errors during the activity.
- Neglecting the importance of continuous improvement of the project.

Previous Studies

Due to lack of studies that directly addressed feasibility studies, studies that clarify the importance of feasibility studies and the stages of real estate and financial development and stumbling were addressed, because they relate, in one way or another to the process of feasibility studies. In an analytical study of the real estate development process in the Kingdom of Saudi Arabia (Al-Qudhibi, 2010), a number of real estate development agencies in the Kingdom of Saudi Arabia were surveyed, in which 96.7% of them found that economic feasibility studies are one of the stages and steps of developing their projects, differing in the arrangement of this step.

However, the focus was on considering it as the third or fourth step in the development stages of real estate projects. The stage of feasibility studies was the most important stage as per the judgment of the development agencies, with a high degree of significance of 86.7%. Moreover, most development agencies (approximately 60%) nominate the concepts they generated by the preliminary feasibility study (comparing costs with returns). Nevertheless, if the feasibility of the project is not clear, 42% of the development agencies do not withdraw, but rather they either continue or conditionally continue, until the feasibility becomes clearer, and this reflects the lack of confidence in these feasibility studies by these agencies.

On the study of the obstacles facing the real estate development sector and its effects on real estate investments, Al-Qahtani (2010), mentioned some of the obstacles experienced by the development agencies in the stage of studying and choosing real estate opportunities. Namely, the lack of accuracy of information related to estimates of the size of the demand, their inconsistencies, and the lack of specialized studies that help in choosing their locations. He also pointed out that there is a restriction associated with both feasibility studies and the stage of financing, which is the difficulty of anticipating revenues, and therefore the difficulty of commitment to payments when borrowing.

The study of "The Importance of Risk Analysis and Management – the case study of the Australian real estate market" (Tularam & Attili, 2012), explained the importance of forecasting and analyzing risks to ensure the achievement of financial expectations of shareholders and partners, which is part of the objectives of the feasibility studies, and these risks can be divided into internal and external risks.

In a study conducted by Liu & Mei (1994) on real estate risk analysis using the net present value model, which is a fundamental value in an investment decision, and based on the time factor, a num-

ber of joint-stock companies and real estate investment funds were studied, and differences in the current value were found between expectations and the actual reality of assets in European real estate investment funds, and it was clear that time is an essential part of the inputs to the process of measuring the present value, which affects the returns on investment.

In addition, the study of Flyvbjerg et al. (2002) on the miscalculation of the cost of public works projects through the study of 111 projects during the past seventy years - from 2002 - in the United States of America in the following points: 90% of the projects under study were mistakenly estimated because the actual cost was higher than the estimated cost in 86% of the selected projects, and in 14% of the selected projects the actual cost was less than the estimated cost. The actual cost was, on average, 28% higher than the estimated cost. The miscalculation of the cost has not decreased during the past seventy years. There has been no education or improvement to solve the accuracy of the estimate issue and that the miscalculation of the cost cannot be justified by error alone, because the error is often the result of strategic misrepresentation of the feasibility study in general.

It is clear from the previous studies that most of the agencies do not care much about the quality of the feasibility studies that they conduct, either by not considering them as important and necessary, or by the inability to provide accurate information that provides a more accurate prediction of the duration of project activities. Moreover, these previous studies show that there are differences between the estimate and the reality in the implementation of projects even in cost, which shows the inefficiency of the estimates that are prepared before the approval of project implementation.

Method

By reviewing the nature of the study and the objective it sought to achieve, a descriptive analytical approach was used that allows for surveying the opinions of members of the study population, which makes the possibility of generalizing the results greater than other approaches of scientific research.

Study Tool

To achieve the objectives of the study, a questionnaire was prepared to collect data related to the subject of the study, through the initial preparation of the questionnaire statements by reviewing research and theoretical and field studies that dealt with the subject of the study.

The content of previous studies and related writings was also analyzed, and through the link between theoretical and field studies, the questionnaire was prepared in its initial form consisting of four parts:

- The First Part: Contains general data about the company, and includes the age, nationality, legal form, annual investment size, source of financing, field of investment, and the number of projects in the last five years of the company.
- The Second Part: Contains data on the company's professionalism, and includes the educational level of the company's leader, the company's specialty, the presence of an engineering marketing financial and a legal team.
- The Third Part: Consists of 13 statements containing data on the mechanism of projects and calculating time limit to identify the extent of the professionalism of their practices.
- The Fourth Part: Consists of 3 themes to evaluate the project time schedules as follows:

- The First Theme: Aims to identify the time difference between the estimated time of the project and the actual time of the company's projects in general.
- The Second Theme: Consists of 11 statements and aims to identify the causes of the difference.
- The Third Theme: Consists of 11 statements, and aims to identify the effects of differences on the market and development.

The close-ended form of the questionnaire was adopted, which identifies possible responses for each question. Likert scale was used for the five-way scale, of the second and the third themes of the study's responses to the basic study variables of the "study themes", and the subjects of the study respondents determined the response to each of the questionnaire statements according to a five-way scale (Likert scale) that includes five responses according to the description of the relationship, which are: (Strongly Agree, Agree, Neutral, Disagree, Strongly Disagree), and the following values are given to them respectively (5, 4, 3, 2, 1) (Al-Qahtani et al., 2004).

Study Population

The target population, which consists of all real estate development companies registered in the Chamber of Commerce and Industry in Riyadh, was identified and they numbered 62, and the questionnaire was distributed to them, due to the small study population. After applying the study tool to the study population, it was possible to recover 27 questionnaires out of the total questionnaires with a recovery rate of 44%, which was considered as the study sample. Table 1 shows the characteristics of the study companies.

Table 1*Characteristics of Study Companies and Their Members*

Characteristics of Study Firms	Categories	Number of Companies	Percentage %
The age of the company.	Less than 5 years	13	48.1
	5-10 years	5	18.5
	11-15 years	3	11.1
	16-20 years	1	3.7
	20 years and over	5	18.5
Company nationality.	Saudi	25	92.6
	Foreign	1	3.7
	Mixed	1	3.7
Legal form.	One-person entity	18	66.7
	A limited liability company	3	11.1
	Joint venture company	1	3.7
	A public joint-stock company	5	18.5
Annual investment volume.	Less than S.R 10 million	18	66.7
	From S.R 25 – S.R 50 million	3	11.1
	From S.R 50 – S.R 200 million	2	7.4
	S.R 200 million and more	4	14.8
Funding source.	The owners	15	55.6
	External financing	1	3.7
	Shares / contributions	2	7.4
	Owners and external financing	5	18.5
	Owners and shares / contributions	1	3.7

Cont. Table 1

Characteristics of Study Companies and Their Members

Characteristics of Study Firms	Categories	Number of Companies	Percentage %
Investment field.	Financing and external shares / contributions	1	3.7
	Owners and external financing and / contributions shares	2	7.4
	Residential	10	37.1
	Commercial	1	3.7
	Mixed / inclusive	2	7.4
	Residential and commercial	6	22.2
	Residential and mixed / inclusive	2	7.4
	Industrial and commercial	1	3.7
	Commercial and hospitality	1	3.7
	Residential, industrial and commercial	1	3.7
	Residential, commercial and mixed / inclusive	1	3.7
	Residential, hospitality, and mixed / inclusive	1	3.7
	Residential, commercial and hospitality, mixed / inclusive	1	3.7

Note. Currency is Saudi Riyal.

Validity of the Study Tool

The questionnaire was presented in its initial form to a group of arbitrators specialized in the scientific field, and opinions were ex-

pressed by the arbitrators on the clarity of the statements of the study tool, the extent of its affiliation to the theme to which it belongs, as well as the extent of its suitability to measure what was it set for, and the adequacy of the statements to cover each basic theme of the study as well as the deletion, addition, or modification of any of the statements. In the light of the directions given by the arbitrators, the amendments were made by most of the arbitrators to the study tool by amending the wording in some of the statements after identifying areas of ambiguity and weakness in them.

Reliability of Scale

The "Alpha Cronbach" coefficient was calculated for the second and the third themes of study, where it showed high reliability (the coefficient of reliability equals 0.80 for the second theme, and equal to 0.88 for the third theme).

Statistical Processing Methods

Frequency, percentages, mean and standard deviation were used. In addition, the Alpha Cronbach reliability coefficient was used to confirm the reliability of the questionnaire, and the Pearson Correlation coefficient was used to estimate the internal consistency of the study tool (Structural Validity), One-way ANOVA was used to indicate the differences between the real estate property's life cycle for different maintenance rates, and the post-LSD (Least-Significant Difference) test was used to determine the direction of validity of the statistically significant differences.

Results

Project Mechanism and Time Calculation

To find out how professional is the companies practice, the company's main motivation for developing a project has been identified, the acceptance of the project, the extent to which professional fea-

sibility studies companies have been employed, the type of studies that are being implemented, the procedures that are being executed before the start of the project, the methods used in developing the project schedule, and the techniques used in developing the schedule, and the results were as follows:

The Main Motivation for the Company to Develop a Project

It appears that the main motivation for companies to develop a project came in terms of arrangement as follows: the presence of ideas and opportunities, then the presence of lands to be invested, then the availability of cash liquidity, Table 2.

Table 2

The Main Motivation for the Company to Develop a Project

The Main Motivation	Number of Companies	Percentage %
Land it owns for investment.	9	33.3
Availability of cash liquidity that it desires to invest.	7	25.9
The availability of ideas and opportunities that it desires invest.	11	40.8
Total	27	100.0

The Main Motivation for Accepting the Project

Note that the main motivation for accepting a project for most companies (70.40%) was to achieve the project for a specific percentage of profits, Table 3.

Table 3*The Main Motivation for Accepting a Project*

The Main Motivation	Number of Companies	Percentage %
Specific profit percentage.	19	70.4
Investing and deploying the assets and funds with any profit not to freeze them.	8	29.6
Total	27	100.0

Hiring Professional Feasibility Studies Companies

It appears that about one-third of the companies do not hire the feasibility studies companies, and the major hiring rate for the rest of the companies was due to the complexity of some projects; as in table 4.

Table 4*Hiring Professional Feasibility Studies Companies*

Are Professional Feasibility Studies Firms Hired?	Number of Companies	Percentage %
No.	9	33.3
Yes, for complex projects only (for the company's team).	10	37.1
Yes, for mega projects only (for the company's team).	3	11.1
Yes, for multi-partner and multi-stakeholder projects.	3	11.1
Yes, for complex projects and mega projects.	1	3.7
Yes, for complex projects, mega projects, multi-partner, and shareholders projects.	1	3.7
Total	27	100.0

The Type of Studies Carried out

It is noted that general studies are the most ones implemented by companies, then followed by studies of a specific site, as shown in table 5.

Table 5

The Type of Studies Carried out

The Type of Studies	Number of Companies	Percentage %
General studies.	10	37.1
Specific site.	4	14.8
Optimal and best use.	2	7.4
General studies and specific site.	1	3.7
General studies and optimal and better use.	2	7.4
General studies and reading customer profiles.	1	3.7
General studies, specific site, optimal and best use.	2	7.4
General studies, specific site and reading customer profiles.	2	7.4
General studies, specific site, optimal and better usage, and reading customer profile .	3	11.1
Total	27	100.0

Procedures Taken before the Start of the Project

It appears that the authorities differ in the procedures taken before the start of a project, and no majority agreed on specific procedures, where most procedures agreed upon were by only four development agencies, see table 6.

Table 6*Procedures Taken before the Start of the Project*

Procedures	Number of Companies	Percentage %
The profitability and applicability of the project are identified.	2	7.4
Benefits and cost sizes are estimated.	2	7.4
Challenges and potential problems are identified.	1	3.7
The profitability and applicability of the project are identified, alternatives are compared and the best alternative is chosen.	2	7.4
Benefits and costs sizes are estimated, and targeted beneficiaries are identified.	1	3.7
The profitability and applicability of the project are identified, benefits and costs are estimated, alternatives are compared and the best alternative is chosen.	2	7.4
The profitability and applicability of the project are identified, benefits and costs are estimated, and the intended beneficiaries are identified.	2	7.4
The profitability and applicability of the project are identified, benefits and costs are estimated, and identifying whether the project is required.	1	3.7
The profitability and applicability of the project are defined, benefits and costs are estimated, and challenges and potential problems are identified.	1	3.7
Benefits and costs are estimated, alternatives are compared and the best alternative is chosen, and the intended beneficiaries are identified.	1	3.7

Cont. Table 6

Procedures Taken before the Start of the Project

Procedures	Number of Companies	Percentage %
The profitability and applicability of the project are defined, benefits and costs are estimated, the intended beneficiaries are identified, and a relevant marketing strategy is drawn.	1	3.7
Benefits and costs are estimated, alternatives are compared and the best alternative is selected, the intended beneficiaries are identified, and identifying whether the project is required.	1	3.7
The profitability and applicability of the project are defined, the benefits and cost are estimated, alternatives are compared and the best alternative is selected, the intended beneficiaries are identified, and identifying whether the project is required.	2	7.4
The profitability and applicability of the project are defined, benefits and costs are estimated, alternatives are compared and the best alternative is selected, the intended beneficiaries are identified, and potential challenges and problems are identified.	1	3.7
The profitability and applicability of the project are defined, benefits and costs are estimated, and identifying whether the project is required, the intended beneficiaries are identified, and challenges and potential problems are identified.	1	3.7

Cont. Table 6*Procedures Taken before the Start of the Project*

Procedures	Number of Companies	Percentage %
The profitability and applicability of the project are defined, the size of benefits and costs are estimated, alternatives are compared and the best alternative is selected, and identifying whether the project is required, the intended beneficiaries are identified, and challenges and potential problems are identified.	1	3.7
The profitability and applicability of the project are defined, benefits and costs are estimated, and identifying whether the project is required, the intended beneficiaries are identified, and a relevant marketing strategy is drawn, and challenges and potential problems are identified.	1	3.7
The profitability and applicability of the project are defined, the benefits and cost are estimated, alternatives are compared and the best alternative is selected, and identifying whether the project is required, the intended beneficiaries are identified, and a related marketing strategy is drawn, and challenges and potential problems are identified.	4	14.8
Total	27	100.0

Methods Used in Developing the Project Schedule

It appears that the most used method for developing the project schedules was the critical path method (48.20%) and that only a few companies (11.10%) used more than one method to ensure higher accuracy in developing their project schedules; table 7.

Table 7*Methods Used in Developing the Project Schedule*

Methods used	Number of companies	Percentage %
Critical path.	13	48.2
Precedence Diagram.	7	25.9
Critical chain.	3	11.1
Personal estimates.	1	3.7
Critical path, Precedence Diagram.	1	3.7
Critical path, critical chain.	1	3.7
Precedence Diagram, critical chain.	1	3.7
Total	27	100.0

Techniques Used in Developing the Schedule

It appears that the most used technique in developing schedules is Rolling-wave planning (44.50%), noting that it is a customized technique in the absence of future clarity of the project details and conditions, and this may cause the accurate inability to measure the estimated time of delivery at the beginning of the project, see table 8.

Table 8*Techniques Used in Developing the Schedule*

The Techniques Used	Number of Companies	Percentage %
Rolling-wave planning.	12	44.5
Agility Technique .	2	7.4
Program Review and Evaluation Technique.	8	29.6
Monte Carlo simulation Technique.	1	3.7
N/A	2	7.4
Rolling-wave planning and agility Technique.	1	3.7
Rolling-wave planning and Program Review and Evaluation Technique.	1	3.7
Total	27	100.0

Evaluation of Project Schedules

To find out the amount of difference in the estimated time of the project, the actual time and the reasons for the difference, and the resulting effects on the market and development, frequencies, percentages, Mean and standard deviation were used, and the results came as follows:

The Time Difference between the Estimated Project Time and the Actual Time of the Company's Projects

It appears that 18.5% of the companies were the only ones that were able to implement their projects and deliver them according to their estimated time, and that 18.5% of the companies could not accurately predict the date of delivery of the projects, and delivered their projects either earlier 37.10% or later 44.40%; see table 9.

Table 9

The Time Difference between the Estimated Time and the Actual Period in Projects Completed by Companies

The time Difference between the Estimated Duration and the Actual Duration in Project Completion	Number of Companies	Percentage %
Earlier than 20%.	8	29.7
Earlier between 20% to 10%.	1	3.7
Earlier between 10% to 5%.	1	3.7
Earlier less than 5% .	0	0
There is no difference.	5	18.5
Later less than 5%.	3	11.1
Later 5% to 10%.	1	3.7
Later 10% to 20% .	5	18.5
Later than 20% .	3	11.1
Total	27	100.0

Reasons for the Difference between the Estimated Project Time and the Actual Time

To identify the reasons for the difference between the estimated time of the project and the actual time, the study questionnaire included a set of statements to identify the reasons for the difference, and the weighted mean averages and standard deviations for the responses of the sample respondents were based on the theme statements as stated in the following table:

Table 10

The Opinions of the Respondents on the Most Important Reasons for the Difference between the Estimated Time and the Actual Time to Complete Projects

No.	Statement	Mean	Standard Deviation	Ranking Order
1.	Municipality permits.	3.89	1.12	1
2.	Other government licenses.	3.74	1.02	2
3.	Electricity Company.	3.70	1.07	3
4.	Other services provision .	3.56	1.09	4
5.	Funding.	3.30	1.41	7
6.	Project design.	3.07	1.27	9
7.	Project execution.	3.52	1.16	5
8.	Frequent changes due to the owners' interventions.	3.48	1.31	6
9.	Managing the company team.	2.89	1.34	10
10.	Inability to read the market accurately.	2.74	1.26	11
11.	Marketing strategy.	3.15	1.26	8
The overall average of the theme		3.37	0.79	

Table 10 indicates that the study population agreed that the reasons for the estimated time for project delivery differ from the actual time was in the following order: municipality permits, then other

government licenses, then the electricity company and the provision of other services, then the project execution, and finally the frequent changes due to the owners' interventions.

Effects on the Market and Development

To identify the effects on the market and development, the study questionnaire included a set of statements to identify the effects on the market and development due to the difference between the estimated time of the project and the actual time.

Table 11

The Opinions of the Respondents on the Effects on the Market and Development Due to the Difference between the Estimated Time and the Actual Time to Complete Projects`

S	Statement	Mean	Standard Deviation	Ranking Order
1.	Direct financial losses.	3.22	1.01	4
2.	Loss of financing opportunities in subsequent projects.	3.30	0.95	3
3.	Dependence on limited self-financing	3.15	0.99	5
4.	The damage to company's reputation .	3.30	0.78	1
5.	The closure and liquidation of the company.	2.85	1.13	11
6.	Reducing and decreasing the operating cost of the company.	3.30	0.91	2
7.	Production of lower quality projects	3.00	0.96	9
8.	Loss of customer base and loyalty	3.11	0.89	6
9.	Legal disputes.	3.11	1.12	7
10.	Reducing the cost of marketing and operating the project after its implementation.	3.07	0.92	8
11.	Changing the marketing strategy to a less distinctive strategy.	2.89	0.97	10
The overall average of the theme.		3.12	0.36	

Table 11 indicates the effects on the market and development due to the difference in the estimated delivery time of the project from the actual time came in the following order: damage to the company's reputation, reducing and decreasing the operating cost of the company, loss of financing opportunities in subsequent projects, direct financial losses, and reliance on financing Limited self, loss of customer base and loyalty, legal disputes, reducing the cost of marketing and operating the project after its implementation, production of lower quality projects, changing marketing strategy to a less distinctive strategy, winding up and liquidating the company.

Statistical Differences in Responses of the Respondents Attributable to General Information about the Company

(T-test) was used to find the level of significance of the differences between the average scores of the responses of the respondents towards the reasons for the difference between the estimated time of the project and the actual time, and the effects on the market and development, attributable to the variable of the legal form of the company, because it is composed of only two categories. One-way ANOVA analysis was also used for the rest of the variables, as it is composed of more than two categories, and (Protected Least Significant Difference [LSD]) was used to determine the direction of differences in the case of statistically significant differences.

Legal Form of the Company

There are no statistically significant differences in the theme of the reasons for the difference between the estimated time of the project and the actual time, as well as the theme of effects on the market and development, i.e.: that opinions about the reasons for the difference between the estimated time of the project and the actual time and effects on the market and development are not affected by the legal form of the company, and this may be due to the clarity and simplicity of general legal procedures adopted in this sector, table 12.

Table 12

The Results of the (T) Test, which Show the Significance of the Differences between the Mean Scores of the Responses of the Respondents Attributable to the Legal Form of the Company

		Number	Mean	Standard Deviation	The (T) Value	Significance Level
Reasons for the difference between the estimated time of the project and the actual time.	Individual	18	3.49	0.43		
	Other	9	3.12	1.23	1.15	0.259
Effects on the market and development.	Individual	18	3.16	0.54		
	Other	9	3.03	0.88	0.48	0.634

Note. Significant at 0.05.

Age of the Company

There are statistically significant differences in the theme of the reasons for the difference between the estimated time of the project and the actual time, while there are no statistically significant differences in the theme of effects on the market and development, as shown in table 13. This may be due to the experience of these companies in correcting their mistakes and avoiding the reasons for the difference they experienced before.

Table 13

The Results of the One-Way ANOVA Analysis of the Differences in the Responses of the Respondents' Responses Attributable to the Age of the Company

Variable	Source of Variance	Total Squares	Degree of Freedom	Average Squares	(F) Value	Significance
Reasons for the difference between the estimated time of the project and the actual time.	Inter-groups.	4.29	3	1.43	2.78	0.046*
	Intra-groups.	11.83	23	0.52		
	Total	16.12	26			
Effects on the market and development.	Inter-groups.	1.55	3	0.52	1.22	0.324
	Intra-groups.	9.71	23	0.42		
	Total	11.25	26			

Note. Significant at 0.05.

It also shows that the direction of statistically significant differences attributable to the age of the company in the theme of the difference between the estimated time of the project, and the actual time comes in favor of companies with age of less than five years, compared to companies with age of more than fifteen years. This means that companies with age of less than five years old are more agreeing to the reasons for the difference between the estimated time of the project and the actual time than companies with age of more than fifteen years, table 14.

Table 14

Post-LSD Test Results to Determine the Direction of the Statistically Significant Differences Attributable to the Age of the Company

The Age of the Company			Mean	Age			
				1	2	3	4
Reasons for the difference between the estimated project time and the actual time.	1	Less than five years.	3.70				*
	2	From five to less than ten years.	3.49				
	3	From ten years to less than fifteen.	2.94				
	4	More than fifteen years old.	2.76				

Note. A direction in favor of differences.

The Annual Investment Volume

It is noted that there are no statistically significant differences in the theme of the difference between the estimated time of the project and the actual time, and this may, according to the observation, because that the regulatory environment for real estate companies is not at the required level of professionalism, and that mega projects are managed in a way similar to small companies, while there are statistically significant differences in the theme of effects on the market and development, and this may be due to the fact that most of these companies invest at their full capacity, as they are relatively similar in impact in terms of difficulties, etc., see Table 15.

Table 15

The results of the One-Way ANOVA analysis of the differences in the scores of responses of the respondents, attributable to the investment volume of the company

Variable	Source of Variance	Total Squares	Degree of Freedom	Average Squares	(F) Value	Significance
Reasons for the difference between the estimated time of the project and the actual time.	Inter-groups	1.81	3	0.60	0.97	0.424
	Intra-groups	14.31	23	0.62		
	Total	16.12	26			
Effects on the market and development.	Inter-groups	4.12	3	1.37	4.43	0.013*
	Intra-groups	7.13	23	0.31		
	Total	11.25	26			

Note. Significant at 0.05.

It also appears that the direction of statistically significant differences attributable to the investment volume of the company in the theme of effects on the market, and development comes in favor of companies whose investment volume is less than S.R 200 million, compared to companies whose investment volume is more than S.R 200 million, meaning that companies whose investment volume is less than S.R 200 million more agree on the theme of effects on the market and development of companies whose investment volume is

more than S.R 200 million, and this may be due to the level of converged professionalism in companies that are close to the volume of its investment, as shown in table 16.

Table 16

The Results of the Post-LSD Test to Determine the Direction of the Statistically Significant Differences Attributable to the Investment Volume of the Company

Age of the Company		Mean 1	Age		
			2	3	4
Effects on the market and development.	1 Less than S.R 10 million.	3.08			*
	2 From S.R 25 million to less than S.R 50 million.	3.82			*
	3 From S.R 50 to less than S.R 200 million	3.77			*
	4 From S.R 200 million or more.	2.45			

Note. A direction in favor of differences.

Number of projects for the last five years

It is clear that there are no statistically significant differences in the theme of the reasons for the difference between the estimated time of the project and the actual time, as well as the theme of effects on the market and development, that is: there is no difference of opinion regarding the reasons for the difference between the estimated time of the project and the actual time, as well as the effects on the market and development, with a different number of projects executed during the last five years, and this may be due to the similarity and depth of experience, see table 17.

Table 17

The Results of the One-Way ANOVA Analysis of the Differences in the Scores of Responses of the Respondents, Attributable to the Number of Projects Executed During the Last Five Years

Variable	Source of Variance	Total Squares	Degree of Freedom	Average Squares	(F) Value	Significance
Reasons for the difference between the estimated time of the project and the actual time.	Inter-groups.	2.36	4	0.59	0.94	0.459
	Intra-groups.	13.77	22	0.63		
	Total	16.12	26			
Effects on the market and development.	Inter-groups.	0.97	4	0.24	0.52	0.723
	Intra-groups.	10.28	22	0.47		
	Total	11.25	26			

Note. Significant at 0.05.

Discussion

It is clear that most companies carry out feasibility studies, even if they are of a general studies type, and they use techniques and

methods of developing timetables, but in a non-professional manner. This is evident from the presence of only 14% of companies from the study population, which only makes sure that the results of feasibility studies are clear before starting the implementation of the project as mentioned in the study literature on the importance of feasibility studies. The results showed that most companies do not have a marketing team or teams are provided in a non-integrated manner, and that most companies fully hire an external legal team. As for the engineering and financial teams, most companies provided them in an integrated manner. The main motivation of the company to develop a project is the availability of ideas and opportunities that it desires to invest, the lands it owns and desires to invest, and the availability of cash liquidity that it desires to invest respectively. The results also showed that most of the sample respondents' main motivation for accepting the project was a specific percentage of profits, and that more than one-third of the respondents hire professional feasibility studies companies for complex projects only, and another one-third do not hire professional feasibility studies companies, and most types of studies were carried out as general studies. The results showed that most of the sample respondents use the critical path in developing the project schedule, the precedence diagram, and that the techniques used in developing the schedule were Rolling-wave planning technique, and the program review and evaluation technique. The results showed that 18.5% of the companies have no time difference between the estimated time of the project and the actual time, and that 37.1% of the companies complete their projects earlier than the estimated time, and the percentage 44.4% of the companies complete their projects later than the time estimated. The results showed that the respondents of the sample are generally disagreeing regarding all elements of the theme of the reasons for the difference, and that the reality of the attitudes of the sample respondents on the theme of the reasons for the difference are divided in terms of the degree of approval into two groups, namely: Agreeing opinions,

which are, respectively: municipality permits, other government licenses, the Electricity Company, provision of other services, project implementation, and frequent changes due to owners' interventions, and Neutral opinions (different in opinion), which are respectively as follows: finance, marketing strategy, project design, management of the company's team, and the inability to read the market accurately. The results showed that the sample respondents in general are different in opinion regarding all elements of the theme of the effects on the market and development, and these effects came in this order: damage to the company's reputation, reduction and decrease of the cost of operating the company, loss of financing opportunities in subsequent projects, direct financial losses, and reliance on limited self-financing, losing customer base and loyalty, legal disputes, reducing the cost of marketing and operating the project after its implementation, producing lower quality projects, changing the marketing strategy to a less distinctive strategy, and winding up and liquidating the company. The results of the study showed the differences in the respondents' responses, as follows:

- 1- There are no statistically significant differences related to the legal form of the company in the theme of the reasons for the difference between the estimated time of the project and the actual time and the theme of effects on the market and development.
- 2- There are statistically significant differences related to the age of the company in favor of companies with an age less than five years, compared to companies with an age over fifteen years in the theme of the difference between the estimated time of the project and the actual time, i.e. that companies with an age less than five years are more agreeing to the reasons of the difference between the estimated time of the project and the actual time than companies with an age more than fifteen years.

- 3- There are statistically significant differences in the theme of effects on the market and development attributable to the investment volume of the company in favor of companies, whose investment volume is less than S.R 200 million, compared to companies whose investment volume is more than S.R 200 million. That is, companies with an investment volume of less than S.R 200 million are more agreeing on the theme of effects on the market and development than companies with an investment volume of more than S.R 200 million.
- 4- There are no statistically significant differences in the theme of the reasons for the difference between the estimated time of the project and the actual time, as well as the theme of effects on the market and development, that is: there is no difference in opinion regarding the reasons for the difference between the estimated time of the project and the actual time, as well as the effects on the market and development with a different number of projects executed during the last five years.
- 5- Accordingly, there will be 81.5% of companies suffering from the difference in the estimated period from the actual period in their development projects, and that their impact on the real estate market is as follows according to the most-recent occurrence:
 - The damage to reputation of real estate companies.
 - Reducing and decreasing the operating cost of real estate companies, which would harm human resources in this sector.
 - Loss of financing opportunities in subsequent projects, which reduces development opportunities.
 - Direct financial losses incurred by real estate companies.

- Reliance on limited self-financing, which reduces the volume of investments.
- Loss of customer base and loyalty, which is reflected on the difficulty of marketing subsequent projects.
- Legal disputes that cost effort, time and money.
- Reducing the cost of marketing and operating the project after its implementation, which results in ineffective and unsustainable projects.
- Production of lower quality projects as distorted projects.
- Changing the marketing strategy to a less distinctive strategy.
- The winding up and liquidation of the company, which will harm the reputation of the real estate market.

Recommendations

A set of specific recommendations can be made within the framework of the results reached, in addition to a set of general recommendations that directly or indirectly relate to the desired objectives of the study. These recommendations include the following:

- 1- The importance of the time difference indicator between the estimated time and the actual time to complete projects in real estate projects should be focused on and clarified that, as it is not just a figure, but rather it carries a number of damages to the real estate market, and the damage reaches to the reputation of companies and downsizing companies due to losses, damages and legal disputes which adversely affects the progress of projects, leads to a difficulty to it and to development of this sector as whole.

- 2- Focusing on the importance of the feasibility studies stage and evaluating its results before starting the completion of the project, and does it really respond all the questions required of it accurately and clearly? It is clear from the study that most companies carry out feasibility studies as an unimportant step, but non-accurately or with high professionalism. Thus, it may be marred by some deficiency in certain parts.
- 3- Increasing the attention paid providing an internal or external marketing team through hiring professional companies to increase the effectiveness and accuracy of project schedules.
- 4- It is noted that most companies were aiming to complete their projects, which is specific financial investment, whose inputs and outputs are affected by time and accuracy of time in financial flows, and need effective time management based on accurate time forecasting.
- 5- The type of feasibility studies - general studies - that have been explained in the second chapter may not often guarantee the accuracy of projecting the project schedule, as it is one of the reasons for the discrepancy and mismatch between the estimated period and the actual duration of projects completion. Hence, more specialized and accurate studies such as a specific site should be carried out and optimal and best use should be adopted in the event that companies desire to reduce the gap between the two periods.
- 6- It may be better to reduce the reliance on the Rolling wave-planning tool, because it does not guarantee accurate results, and real estate companies must develop their techniques, because this tool is often used in new projects in which the company does not have experience as mentioned in the literature.

- 7- The completion of the project earlier than expected may be a negative indication of the inaccuracy of the feasibility studies, and the extent to which the estimated time for the completion of the project is expected, and the company may need to identify the reasons, therefor, which are reasons that may often be due to a more than logical reservation in regard to the time of activities as it is may cause financial waste and marketing disruption, and is poor planning with a harm not less than late completion.
- 8- The access and visiting government agencies and service providers and meeting with them and identifying their procedures accurately may reduce the miscalculation of the projects, because the most important four reasons stated by the sample population stem from this step. It was noted from the reality of most of these companies that these agencies do not actively take into account the actual time, that these agencies will take to complete their licenses, and always assume that this time is late and unexpected, and not an actual time that must be considered as it is.
- 9- Proposing future studies that complement this subject and include: the extent of the ability of project management in real estate companies to adhere to the estimated period of their projects, the reasons for the inaccuracy of feasibility studies on the ground in real estate projects, compared to the methods of global real estate development companies in their commitment to time with local companies, and the difference in the estimated cost from the actual cost in development projects and their impact on the real estate market, and the difference in the estimated range from the actual scope in development projects and their impact on the real estate market.

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أسباب الاختلاف بين الفترة المتوقعة والفترة الفعلية لإنجاز المشاريع:

دراسة لأداء شركات التطوير العقاري في مدينة الرياض

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ملخص

الأهداف: الهدف الرئيس لهذه الدراسة هو تعرف آراء الشركات في التطوير العقاري؛ كيف تدير الشركات مشاريعها وما القدرات التي تمتلكها لتحقيق أهدافها في الوقت المحدد، كما هو مخطط لها. ومحاولة معرفة الخلل -إن وجد- بناءً على المعايير والنظريات العلمية في تطبيق دراسات الجدوى وعلم إدارة المشاريع، وبما يخص مهارات التخطيط والتنبؤ الزمني لتنفيذ المشاريع. **المنهج:** اتبعت الدراسة المنهج التحليلي الوصفي. وتتمثل المنهجية التي تم اتباعها في ثلاث مراحل: مرحلة تجميع البيانات، ومرحلة تحليل البيانات، ومرحلة استخلاص النتائج والتوصيات. طبقت الدراسة على عينة، قوامها 44% من الشركات والجهات العقارية المسجلة في الغرفة التجارية الصناعية في مدينة الرياض، القائمة في أثناء تنفيذ الدراسة، وقد استجابت للدراسة 27 جهة، باستخدام برنامج SPSS لإدخال البيانات وتحليلها. **النتائج:** أظهرت النتائج أن 18.5% من الشركات استطاعت تحقيق دقة عالية بين الوقت المقدر للمشروع والوقت الفعلي. ووجدت الدراسة أن 81.5% من الشركات لم تستطع تحقيق ذلك؛ إما بتقدير زمني أقصر من الفعلي وإما أطول. كما أظهرت النتائج وجود فروق ذات دلالة إحصائية بحسب عمر الشركة ومحو الأثار على السوق والتنمية. **الخاتمة:** أوصت الدراسة بأهمية معرفة الفارق الزمني بين الوقت المقدر والوقت الفعلي لإتمام المشاريع العقارية؛ بحيث يمكن تجنب الأضرار التي تلحق بسوق العقارات. اقترحت الدراسة مزيداً من البحوث المستقبلية؛ مثل مدى قدرة إدارة المشاريع في الشركات العقارية على الالتزام بالمدة المقدر لمشاريعها وأسباب عدم دقة دراسات الجدوى والاختلاف في التكلفة التقديرية عن التكلفة الفعلية في مشاريع التطوير العقاري.

الكلمات المفتاحية: العقارات، التطوير، إدارة المشاريع، إدارة الوقت، دراسات الجدوى.

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