



The Impact of Strategic Factor on Improving Performance Effectiveness for Construction Projects - A case Study

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ABSTRACT

Mission, vision and strategy play an important role recognized today by most organizations. These tools are very beneficial in steering an organization in straight direction. Strategic factors (SF) rely on the interaction between internal and external factors and on determining the future mission and vision of the organization in the light of determined objectives, and regulatory strategies and policies. This study is an analytical study of Libyan Investment & Development Company (LIDCO) to determine the impact of the strategic factors on improvement of evaluation effectiveness of LIDCO performance using SWOT in conjunction with following criteria: (Total Quality Management Criteria, Quality Performance Criteria and Competitive Position Criteria). The researchers used the descriptive analytical method to analyse the content using the statistical method and the strategic analysis tool (SWOT) to understand the role and tasks that the company performs and the difficulties and obstacles facing its work by evaluating its performance to develop a strategic vision for the development of its performance. Results show delays by LIDCO in implementing projects as evaluation of the strategic factors were disregarded, leading to disregarding the application of competitive position criteria to project construction, lack of continuous improvement and of benchmarking. This paper contributes to how the factors affecting strategic planning are used and classified into different categories according to the point of view researchers in the field of strategic planning. And too knowledge of the factors influencing strategic planning, and it is very useful for engineers because of the various uses of the factors influencing strategic planning.

أثر العامل الاستراتيجي على تحسين فعالية الأداء للمشاريع الإنشائية - حالة دراسية

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الكلمات المفتاحية:

إدارة الجودة الشاملة
ادارة المشروع
فعالية الأداء
العوامل الاستراتيجية
تحليل SWOT

المخلص

المهمة والرؤية والاستراتيجية لها دورا هاما تعترف بها اليوم معظم المنظمات. وهذه الأدوات مفيدة للغاية في توجيه المنظمة في الاتجاه الصحيح. تعتمد العوامل الاستراتيجية (SF) على التفاعل بين العوامل الداخلية والخارجية وعلى تحديد مهمة ورؤية المنظمة في المستقبل في ضوء الأهداف المحددة والاستراتيجيات والسياسات التنظيمية. هذه الدراسة هي دراسة تحليلية للشركة الليبية للتنمية والاستثمار (LIDCO) لتحديد تأثير العوامل الاستراتيجية على تحسين فعالية تقييم أداء LIDCO باستخدام SWOT بالاقتران مع المعايير التالية: (معايير إدارة الجودة الشاملة ومعايير الأداء الجيدة ومعايير المركز التنافسي). استخدم الباحثان الطريقة التحليلية الوصفية لتحليل المحتوى باستخدام الطريقة الإحصائية وأداة التحليل الاستراتيجي (SWOT) لفهم الدور والمهام التي تؤديها الشركة والصعوبات والعقبات التي تواجه عملها من خلال تقييم أدائها لتطوير رؤية استراتيجية لتطوير أدائها. وتظهر النتائج تأخر LIDCO في تنفيذ المشاريع حيث تم تجاهل تقييم العوامل الاستراتيجية، مما أدى إلى تجاهل تطبيق معايير المركز التنافسي على تشييد المشاريع، وعدم التحسين المستمر والمقارنة. تساهم هذه الورقة في كيفية استخدام وتصنيف العوامل التي تؤثر على التخطيط الاستراتيجي إلى فئات مختلفة وفقاً لوجهة نظر الباحثان في مجال التخطيط الاستراتيجي. والمعرفة المفرطة بالعوامل التي تؤثر على التخطيط الاستراتيجي، وهي مفيدة جداً للمهندسين بسبب الاستخدامات المختلفة للعوامل التي تؤثر على التخطيط الاستراتيجي.

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Introduction

Project management as a discipline is one of the richest sources of proven techniques for accomplishment of the goals, allowing organizations to reduce the need for strict control and heavy rigidity. It also embodies new methods of restructuring management responsibilities. Project management provides techniques for making trade-offs between conflicting goals and enterprise priorities besides experiencing a better control and coordination. It also helps in reducing time, lowering costs, and producing higher order results.[1]

The strategic management process results in decisions that can have significant, long-lasting consequences. Meanwhile, erroneous strategic decisions can inflict severe penalties and can be exceedingly difficult, if not impossible, to reverse. Most strategists agree, therefore, that strategy evaluation is vital to an organization's well-being; timely evaluations can alert management to problems or potential problems before a situation becomes critical.[2]

Evaluation is a valuable tool to clarify the effectiveness of the work of achieves goals, and whether it has an impact, and works efficiently. It is common to the evaluation focuses on the internal dimensions of which is to manage human and financial resources, as well as planning, organization, implementation, follow-up, monitoring, and the factors that affect the outputs, and omit the external dimensions which deals with the strategic aspect and the involvement of strategic factors in the external environment of the project, and their impact on the organization and its objectives and components of the strategy. Therefore, this research comes to link the number of variables that can help to make the evaluation more effective as the strategic management of projects is one of the important factors for successful managerial performance, and to test the impact on actual performance through operational processes, and thus the effectiveness of performance evaluation management.

An Overview and background of Strategic Factors (SF):

This research deals with the study of the strategic factors that affect improving the effectiveness of the performance of construction projects by applying an analysis of the internal and external environment of the institution under study.

The following studies, important in the field, have been reviewed for the benefit of the study in hand.

1. Improving the Efficiency and Effectiveness of Construction Project Planning and Scheduling Using Lean Principles:

This research investigates applying lean principles to address these challenges and enhance construction project planning, scheduling efficiency, and effectiveness.[3]

2. Foreman Performance Motivation Factors Analysis in Construction Projects:

This research aims to determine the level of needs that influence the motivation of construction foremen and analyse the motivational factors that influence the motivation of construction foremen.[4]

3. Impact of Strategic Factors on Improving Project Evaluation Administrative Performance Effectiveness:

The study reached a set of results, the most important of which are: There is a positive impact of introducing the three basic strategic factors (strategic analysis SWOT, mission definition, planning, ...) in improving the effectiveness of administrative performance evaluation. The competitive position criteria were the variables most affected by the inclusion of strategic factors in the performance evaluation.[5]

4. Strategic Management and its Impact in Increasing Business Organizations Performance:

The research highlights the conditions that make strategic management practice important to business organization management, and points out the extent of the similarity between such conditions surrounding and the conditions of organizations under study. It also clarifies the concept and importance of strategic management and its implementation steps, and realistically diagnoses the actual practice of the strategic management in the organizations, as well as the application impact of this method on their performance.[6]

Current Study and Previous Studies:

Through a review of available studies on evaluating management

performance in the projects, it appears that those studies that have adopted the evaluation from a strategic perspective are relatively few, especially dealing with construction projects which are hardly rare. Also notes that the focus in evaluating the performance of construction projects in the evaluation criteria for the quality of performance, and therefore, the expected additions from this study compared with previous studies lies in the following:

- Focuses on a quest to improve the effectiveness of evaluating management performance of projects by analyzing the possible impact of the strategic factors in evaluating the administrative performance of construction projects.
- The study tried to find a combination that combines the criteria for evaluating management performance (traditional), with the total quality standards and with the competitive position of criteria to measure the achievement of the strategic objectives of the company.
- Characterized this study in a manner fitted to the variables, as shown by the study prepared sample, while not dealing with previous studies that found possible only a fraction of these variables.

Problem Statement:

The problem can be formulated as follows:

- The extent of understanding of the LIDCO's management for the strategic factors and clarity in terms of analysis of internal and external environment, and to selecting the task.
- The importance degree attached the LIDCO to strategic management in the total quality management, quality of performance and competitive position of the LIDCO.
- Non-attention to the strategic factors in improving the effectiveness of administrative performance of the project through greater clarity in assessing the criteria of total quality management, quality performance and competitive position.

Aim & Objective:

This research aims to achieve the following objectives:

- Measuring the importance attached the LIDCO to strategic factors.
- Clarification of the depth of understanding of the factors strategy of the LIDCO by managing the project, particularly in terms of clarity of analysis of internal and external environment.
- Show the effect of attention to the strategic factors in the total quality management of the LIDCO.
- Show the effect of attention to the strategic factors in the quality performance of the LIDCO.
- Show the effect of attention to the strategic factors in the competitive position of the LIDCO.
- Clarification of concern over the impact of strategic factors in improving the efficiency of administrative performance of the projects through greater clarity to assessing the total quality management, quality of performance and competitive position.

Hypothesis:

This research tries to build assumptions through analysis and detection of relationships between influence the strategic factors of the project on the one hand, and improve the effectiveness of performance evaluation on the other hand, this foundation will be built upon in the way of the study procedures and aims of this dimension of analysis to test three hypotheses are:

The first hypothesis:

H_0 : Apply total quality management criteria in the LIDCO has a positive impact on evaluation performance effectiveness for construction projects.

H_1 : Apply total quality management criteria in the LIDCO has a negative impact on evaluation performance effectiveness for construction projects

The second hypothesis:

H₀: Apply quality performance criteria in the LIDCO has a positive impact on evaluation performance effectiveness for construction projects.

H₁: Apply quality performance criteria in the LIDCO has a negative impact on evaluation performance effectiveness for construction projects.

The third hypothesis:

H₀: Apply competitive position criteria in the LIDCO has a positive Impact on evaluation performance effectiveness for construction projects.

H₁: Apply competitive position criteria in the LIDCO has a negative Impact on evaluation performance effectiveness for construction projects.

Importance:

This research is an attempt to investigate two main points:

- a) The impact of strategic factors in improving the evaluation effectiveness of administrative performance through a form that contains strategic factors of the projects and processes that include planning, implementation, monitoring and evaluation.
- b) Two dimensions of evaluation:
 - The internal dimension, which is the project in terms of performance, good design, and accuracy of achievement, appropriate, efficiency and effectiveness.
 - The external dimension, which measures the contribution of the project in achieving the strategic objectives set, and its impact on message of the project, objectives, strategies, and policies, and the extension of the impact on the organization and the environment that represent the scope of the activity.

Methodology:

This research will be conducted in these phases as follow:

- Review of the literature and studies on issues of project management, construction management, strategic management, and performance evaluation
- Processing a questionnaire to be distributed to a number of people who are involved in the subject matter of the community through the sample.
- The statistical analysis program SPSS and strategic analysis tool (SWOT) were used to analyse data and test hypotheses.
- Constitutes the analysis of the data collected in order to knowledge impact of Strategic factors on improving evaluation administrative performance effectiveness for construction projects.

Definition of Basic Terms

Basic terms are a set of standards that work together to give information about the success of management performance to construction projects, Figure (1) shows model study variables (independent, intermediate and dependent) to statement the effect of strategic factors in improving the effectiveness of evaluating management performance of the project.

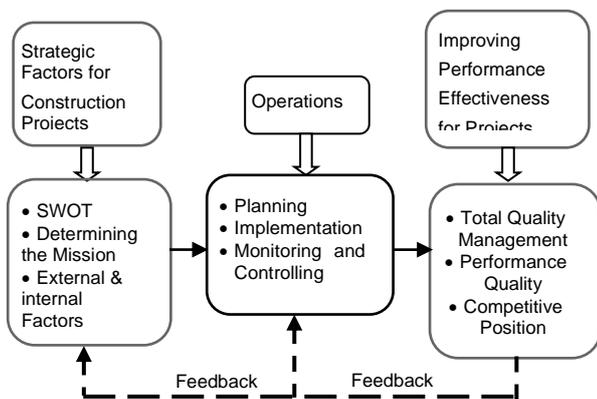


Fig. (1): Structural Model for Study (Prepared by

Independent Variable:(Strategic Factors):

Wheelen & Hunger defined strategy factors are those internal and

external elements that determine the future of the organization. Thus, the acquisition of strategic character of any element or factor consists of the environment organization be conditional on the extent of its impact on the conduct of its activities and thus survival or not.[7]

- Strategic External Factors:

It is a major factor in the external environment of the organization and that the probability of occurrence and impact on organization medium or high, and are classified on the basis of a risk threatening the organization or opportunities to enhance the survival or growth.

- Strategic Internal Factors:

Which is about the strengths and weaknesses that are internal environment of the organization which is to be determined the organization will benefit from the opportunities that exist in the external environment, and at the same time determine the ability to avoid risks that threaten their survival.[8]

- SWOT Analysis:

SWOT analysis is shorthand for describing strengths and weaknesses of LIDCO and the opportunities and threats that it faces. It is one of months of strategic planning tools, which analyse the situation of companies and analysis of the internal work environment and its relation to the external environment (competitive) from suppliers, competitors, customers and other laws.[7]

- Determining Organization Mission

The firm’s mission is its raison d’être, or the fundamental reason why it exists. The firm’s mission also sets out what it wants to become over time. Missions can be narrowly or broadly defined and often emanate from the founding entrepreneur’s vision of the firm. Businesses do, however, develop, change and diversify but there should be a common thread that links the various parts of the business together. The firm’s mission statement should be clearly articulated and allow action to be taken based on it.

Mediator Variable (Operations):

Operations that are performed when executing any construction project in LIDCO.

- Planning:

Planning process is the process group of formulating and revising project goals and objectives and creating the project management plan that will be used to achieve the goals the project was undertaken to address.

- Implementation:

The process of project implementation, involving the successful development and introduction of projects in the organization, presents an on-going challenge for managers. The project implementation process is complex, usually requiring simultaneous attention to a wide variety of human, budgetary, and technical variables. [9]

- Monitoring & Controlling:

The Monitoring and Controlling process group is where project performance measurements are taken and analysed to determine whether the project is staying true to the project plan. The idea is to identify problems as soon as possible and apply corrective action to control the work of the project and assure successful outcomes. [10]

Dependent Variable (Criteria):

Evaluation Criteria to the effectiveness of the administrative performance of the projects are a set of Standards that work together to give information on the status of administrative performance in an organization, namely:

- Total Quality Management (TQM):

TQM can be defined as an organized scientific approach towards continuous improvement of quality involving everyone in the organization covering every function aimed towards total customer satisfaction. TQM is management people’s process and involvement of the top management is a must for its success. Hence the entire organization must have a review of total quality management and accept to implement it in earnest. [11]

1. Quality Culture:

Quality culture is defined as the pattern of human habits, and behaviour concerning quality. An organization with a good" quality culture" is the one having positive and clear habits, beliefs, and behaviour concerning quality. These habits, beliefs, and behaviour

will manifest themselves in the actions of top management and employees. [12]

2. Customer Satisfaction:

Customer satisfaction measurement is one of the most important issues concerning business organizations of all types, which is justified by customer orientation philosophy and the main principles of continuous improvement of modern enterprises. In the recent decades, the importance of customer satisfaction for business organizations has been increased. Thus, Customer satisfaction measurement is now considered as the most reliable feedback, taking into account that it provides in an effective, direct, meaningful and objective way the Customer's performances preferences and expectations. [13]

3. Leadership:

This category is interested in senior executive leadership and the level of personal involvement of the top managers. Quality starts at the top and evidence of this must exist. The firm's leaders must not only support quality but also be visible in quality related areas. [14]

4. Continuous Improvement:

Performance improvement is the concept of measuring the output of a particular process or procedure, then modifying the process or procedure to increase the output, increase efficiency, or increase the effectiveness of the process or procedure. The concept of performance improvement can be applied on individual performance such as organizational performance.

Nearly every organization faces the need to make substantial operational improvements while balancing mounting pressure to maximize resources. Improvement strategies often revolve around continuous process improvement (CPI). [15]

- Performance Quality:

Performance quality measurement is the process by which businesses, governments and other organizations establish criteria for determining the quality of their activities, based on organizational goals. It involves creating a simple, but effective, system for determining whether organizations meet objectives. [16]

1. Relevance:

The degree to which the outputs, outcomes or goals of a program remain valid and pertinent as originally planned or as subsequently modified owing to changing circumstances within the immediate context and external environment of that program.

2. Efficiency:

A measure of how economically or optimally inputs (financial, human, technical and material resources) are used to produce outputs. An assessment of program efficiency measures the "productivity" of the program interventions. It assesses the results obtained in relation to the expenditure incurred and resources used by the program during a given period of time.

3. Effectiveness:

A measure of the extent to which a program achieves its planned results (outputs, outcomes and goals). An assessment of program effectiveness focuses on the extent to which the outputs have been or will be achieved and whether the program is likely to contribute to the stated outcomes and impact. [17]

- Competitive Position:

Ability of a firm or a nation to offer products and services that meet the quality standards of the local and world markets at prices that are competitive and provide adequate returns on the resources employed or consumed in producing them.

1. Market share:

The percentage of an industry or market's total sales that is earned by a particular company over a specified time period. Market share is calculated by taking the company's sales over the period and dividing it by the total sales of the industry over the same period. This metric is used to give a general idea of the size of a company to its market and its competitors.[18]

2. Profit Growth:

Profit Growth is Gross profits minus the value of capital investment compared to competitors.

3. Benchmarking:

A benchmark refers to the performance that has been achieved in the recent past by other comparable organizations, or what can be reasonably inferred to have been achieved in similar circumstances.[17]

The benchmarking process helps the organization to know Its position, understand your competition, define the best processes, and integrate them into organization. Even more important, It's provides a way to discover and understand methods that can be applied to your process to effect major improvements.[19](15)

Theoretical Framework

The theoretical framework explains the main topics related to research.

- Project Management:

Project management is a process that includes initiating a new project, planning, putting the project plan into action, and measuring progress and performance. It involves identifying the project requirements, establishing project objectives, balancing constraints, and taking the needs and expectations of the key stakeholders into consideration.

"According to the PMBOK® Guide, project management involves applying knowledge, skills, tools, and techniques during the course of the project to accomplish the project's objective. It is the responsibility of the project manager to ensure that project management techniques are applied and followed".[10]

- Strategic Management:

Strategic management is the process by which an organization formulates its objectives and manages to achieve them. Strategy is the means to achieve the organizational ends. A strategy is a route to the destination viz., the objectives of the firm. Picking a destination means choosing an objective. Objectives and strategies evolve as problems and opportunities are identified, resolved and exploited.

Strategic management can be defined as the art and science of formulating, implementing, and evaluating cross-functional decisions that enable an organization to achieve its objectives.[8]

- Strategic Management Process:

We have explained strategic management as a process or series of steps. The basic steps of the strategic management process, shown in fig. (2), include: (1) perform an environmental analysis, (2) establish an organizational directional, (3) formulate an organizational strategy, (4) implement the organizational strategy, and (5) exert strategic control.[12]

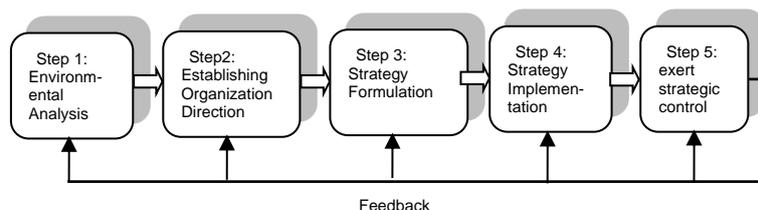


Fig. (2): Major Steps in the Strategic

- Strategic Planning:

Strategic planning is the process of formulating and implementing decisions about an organization's future direction. This has been shown in Fig. (3).

This process is vital to every organization's survival because it is the process by which the organization adapts to its ever-changing environment, and the process is applicable to all management levels and all types of organizations.

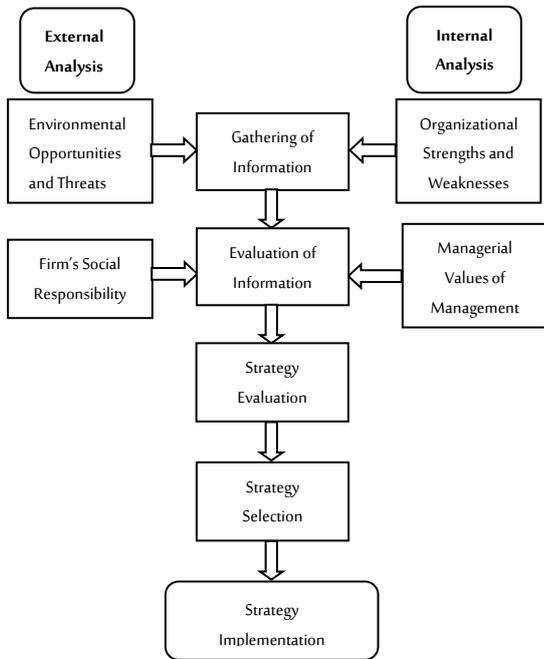


Fig.(3) : Basic Strategic

Strategists are agreed that an understanding of the competitive environment is an essential element of the development of strategic management. study of the environment will provide information on the nature of competitive as a step to development sustainable competitive advantage.[16]

- SWOT Analysis:

SWOT is an acronym for the internal strengths and weaknesses of a firm and the environmental opportunities and threats facing that firm. SWOT analysis is a historically popular technique through which managers create a quick overview of a company's strategic situation. It is based on the assumption that an effective strategy derives from a sound "fit" between a firm's internal resources (strengths and weaknesses) and its external situation (opportunities and threats). A good fit maximizes a firm's strengths and opportunities and minimizes its weaknesses and threats. Accurately applied, this simple assumption has sound, insightful implications for the design of a successful strategy.[17]

- Strategic Planning Using SWOT Analysis:

The strategy that can be planned for the institution based on the SWOT matrix is shown in the box numbers 5, 6, 7 and 8 in Table (1). Technical implementation of the strategic plan is as follows: [18] Box number (1): Is filled with opportunities that can be utilized by the organization.

Box number (2): Is filled with threats faced by the organization.

Box number (3): Is filled with the strength held by organization.

Box number (4): Is filled with weaknesses faced by the organization.

Box number (5): Is filled with the strategy presented in the form of development programs which can be used to take advantage of opportunities by utilizing the existing strength.

Box number (6): Is filled with the strategy presented in the form of the development program that can be used to reduce the weaknesses by looking at the existing opportunities.

Box number (7): Is filled with the strategy presented in the form of the development programs that can be used to reduce and to anticipate the threats by looking at the existing strength.

Box number (8): Is filled with the strategy presented in the form of the development programs that can be used to reduce the weaknesses and threats that they face.

Inclusion of development programs at boxes (5, 6, 7 and 8) must be sorted by their priority.[18]

Table (1): Strategy Based on a Position of SWOT Matrix

		Internal Condition	
		Strengths	Weaknesses
External Condition	Opportunities	• Strength ③.....	• Weakness 1.....④.....
		• Opportunity..n.	• Weakness.n
	Threats	• Opportunity1.....①.....	• Threat 1.....②.....
		• Threat n	• Threat n

Practical Part

This part deals definition of the LIDCO as well as the nature of the tools used in its design and select the paragraphs and submit it to arbitration, and the model built for research and the development of study procedures and statistical methods used to examine assumptions.

- Libyan Development & Investment Holding (LIDCO):

Libyan Investment and Development Holding LIDCO was established pursuant to Decision No. (100) for the year 2004 with a capital of one billion. LIDCO is wholly owned by the Al-enma Fund based in Tripoli.

- Study Design and Structural Model:

The problem under study and the objectives of this research are the study of the strategic factors impact to improve the effectiveness of evaluating performance. The assumption is that the strategic factors for the projects are analysis of the internal and external environments and definition of the mission of the project vision, mission and goals. All of these factors, if taken into account, are assumed to play a pivotal role in improving the effectiveness of evaluating performance during the implementation processes of the project. Applying performance quality criteria along with total quality management criteria and competitive position criteria could potentially give a more accurate picture of the appropriateness of the goals set with the goal of the project in general; effectiveness and efficiency of financial and administrative performance. Consequently, the level of accuracy evaluation output of the strategic factors will address the multiple dimensions such as spreading quality culture among the individuals involved in the project, as well as the continuous improvement for its operations by seeking to satisfy the customers of the project. This would show the role of the project in achieving competitive advantage which leads to an increase in market share and finally to a larger number of markets enhancing the LIDCO 's competitive position.

- Study tools:

The questionnaire was designed to collect data necessary to examine the hypotheses of the current study. It consists of the following steps:

- Determining the Purpose of the Resolution:

Developed a questionnaire to collect data on variables, the study provided they meet the indications enough of the truth and consistency, and follow the build-resolution scientific methods used in the construction of such questionnaires, which can be summarized in the determination of the purpose and dimensions of the main and branch and tariffs procedural her and the formulation of the paragraphs and extract the semantics of validity and reliability.

- Determining the Dimensions Measured by the Questionnaire:

The improvement in the effectiveness of performance evaluation management of the project consists of three variables which are:

1. Total quality management (Customer satisfaction, continuous improvement, leadership, quality culture), is measured by items (1-34).
2. The indicators of performance quality (relevance, effectiveness, efficiency) is measured by items (35-54); and

3. The competitive position (market share, profit growth, and benchmark), is measured by items (55-80).

- Paragraphs of the Resolution (Research Tool):

Each area of study (elements of the problem under study) was formulated in questions sufficient to address and measure such area. These questions took into account they are:

- a) Clear and precise
- b) Suitable for the area they are intended to measure.
- c) Related and comprehensive.
- d) Set according to Likart Scale (5-items) with positive attitude to ensure consistent responses for easy measure (Completely

Agree, Agree).

- Identifying Trends:

They are determined according to the directions of the Likert scale sample as set in Table (2) where the length of the period used is (4/5) or about (0.80) calculated on the basis of the length of period that the weight of the five responses (1-2-3-4-5) is confined between four distances which also determine the degree of application through the percentage of application-level extracted by the weight average measure of likrat Scale.

Table (2): Identifying Trends according to Likert scale by the weight average

Number of points	Weight Average	Application level	%	Grade
1	From (1) to (1.79)	Do not Agree at all	(20 - 35.99)	Very poor
2	From (1.80) to (2.59)	Do not Agree	(36 - 51.99)	Poor
3	From (2.60) to (3.39)	Agree Somewhat	(52 - 67.99)	Medium
4	From (3.40) to (4.19)	Agree	(68 - 83.99)	Good
5	From (4.20) to (5)	Completely Agree	(84 - 100)	Excellent

Research Community and Sample:

As LIDCO is the main subject of the study, the researcher developed a frame work (research community) for the research limited to (89) employees out of (130) employees representing LICDO personnel in the Construction Section. This number (89 employees- randomly selected) represents a sample of the research community and conforms with ($n \geq 30$) principle. Information collected through such sample is reliable and reflects the prevailing attitude in the research community; LIDCO Construction Section.

Method of Data Analysis:

Information collected through questionnaire was analyzed by statistics specialist using SPSS software package as follows:

- Stability Test:

To determine the stability of the scale Alpha test was adopted to measure the internal stability of items of the questionnaire and their ability to give results consistent with the responses of the questionnaire respondents. Alpha is the coefficient of internal stability of the responses according to the following equation:

$$\alpha = \frac{n}{n - 1} \left(1 - \frac{\sum S_n^2}{S^2} \right)$$

Where:

- α = Internal stability coefficient
- n = Total number of items test.
- S_n^2 = Variation degrees of each Item from items test.

The value of stability coefficient between (0,1), and the smallest acceptable value is (0.6).

- Frequency Distribution:

It is at able consists of a box containing the answers and the corresponding repetition of the number of times where they were selected by respondents. It is used to describe the nature of the answers about a particular phenomenon.

- Measures of Central Tendency:

Sample answers can be summarized by statistical indicators, and the most important indicators are measures of central tendency which is used to measure the degree of the respondents' answers on a particular statement. Among the most important of these standards "Medium, Mode, and Arithmetic Mean"

- Measures of Dispersion:

It is a statistical indicator to measure the degree of difference between the responses of the respondents to a particular statement. The higher the degree of the difference, the higher the degree of the measure of dispersion. The most important measures of dispersion is "Standard Deviation".

- T-Test:

As the data collected from questionnaire sheets is the ordinal data, the use of statistical method appropriate depends on the size of the sample selected for the search. If the sample size is relatively large, that is greater than (30) i.e ($n \geq 30$), we can use T-Test as a way suitable to test hypotheses and to apply results to the community based on the sample.

Note:

Statistical hypotheses about the questionnaire statements are as follows:

assumption of null hypothesis has (H_0) symbol and takes equal sign (=), and the alternative hypothesis as symbol(H_1) and takes greater than or less than or not equal sign. The hypothesis tested to see whether this was the result of absolute coincidence or it is the direction of the views of the respondents at the level of ($\alpha=0.05$), at confidence level (95%) with a note of the following:

- Accept the Null- hypothesis if ($P \geq \alpha$), and
- Reject the Null-hypothesis and accept the Alternative-hypothesis if the ($P < \alpha$).

Test results of Reliability Coefficient:

To judge the degree of reliability and consistency of the scale retail midterm method we used to measure the reliability coefficient. It is a statistical indicator by which the degree of consistency and reliability of the questionnaire statements is judged. Table (3) presents the results of reliability coefficient test for each set of statements. Reliability coefficient values in Table (3) indicate for each set of statements that there is a strong positive correlation between the sample responses to questionnaire statements, indicating the validity and reliability of the scale.

Table (3): Results of Reliability Coefficient test

Section	Number of Statements	Value of Reliability Coefficient
Application of TQM (Quality Culture, Customer Satisfaction, Leadership and Continuous Improvement)	34	0.957
Application of Performance Quality (Relevance, Effectiveness and Efficiency)	29	0.959
Application of Competitive position (Market Share, Profit Growth, and Benchmark)	17	0.784
All Sections	80	0.969

This increases the confidence in the results obtained, and therefore the questionnaire is adopted as a primary source of research data.

This increases the confidence in the results obtained, and therefore the questionnaire is adopted as a primary source of research data.

Results of Statistical Analysis Using the T- Test and Statistical Measures:

- Statistical Analysis Results of the First Section:

Table (3) shows that responses of the employees, to Application of Total Quality Management Section (Quality Culture, Customer Satisfaction, Leadership and Continuous Improvement), have a trend towards (Do not Agree) item. In general, the arithmetic mean is (2.5) with a standard deviation of (0.45). In other words, the research community members have no idea regarding application of Total Quality Management.

• Quality Culture Criteria:

Responses of the employees, to Quality Culture criteria have a trend towards (Do not Agree) item. In general, the arithmetic mean is (2.37) with a standard deviation of (0.49).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P=0.002) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

• Customer Satisfaction Criteria:

Responses of the employees, to Customer Satisfaction criteria have a trend towards (Agree somewhat) item. In general, the arithmetic mean is (2.82) with a standard deviation of (0.48).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P=0.225) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

• Leadership Criteria:

Responses of the employees, to Leadership criteria have a trend towards (Agree somewhat) item. In general, the arithmetic mean is (2.65) with a standard deviation of (0.26).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P=0.060) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

• Continuous Improvement Criteria:

Responses of the employees, to Continuous Improvement criteria have a trend towards (Don't agree) item. In general, the arithmetic mean is (2.39) with a standard deviation of (0.11).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P=0.002) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

- Statistical Analysis Results of the Second Section:

Table (3) shows that responses of the employees, to Application of Performance Quality Section (Relevance, Efficiency, and Effectiveness), have a trend towards (Do not Agree) item. In general, the arithmetic mean is (2.58) with a standard deviation of (0.41). In other words, the research community members have no idea regarding application of Performance Quality Criteria.

• Relevance Criteria:

Responses of the employees, to Relevance criteria have a trend towards (Agree somewhat) item. In general, the arithmetic mean is (2.66) with a standard deviation of (0.53).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P=0.140) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

• Efficiency Criteria:

Responses of the employees, to Efficiency criteria have a trend towards (Do not agree) item. In general, the arithmetic mean is (2.52) with a standard deviation of (0.37).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P=0.001) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

• Effectiveness Criteria:

Responses of the employees, to Effectiveness Criteria have a trend towards (Do not agree) item. In general, the arithmetic mean is (2.57) with a standard deviation of (0.44).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P=0.018) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

- Statistical Analysis Results of the Third Section:

Table (3) shows that responses of the employees, to Application of Competitive Position Section (Market Share, Profit Growth and Benchmark), have a trend towards (Do not Agree) item. In general, the arithmetic mean is (2.59) with a standard deviation of (0.22). In

other words, the research community members have no idea regarding application of Performance Quality Criteria.

• Market Share Criteria:

Responses of the employees, to Market Share Criteria have a trend towards (Agree somewhat) item. In general, the arithmetic mean is (2.68) with a standard deviation of (0.24).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P=0.080) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

• Profit Growth Criteria:

Responses of the employees, to Profit Growth Criteria have a trend towards (Do not agree) item. In general, the arithmetic mean is (2.59) with a standard deviation of (0.07).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P=0.002) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

• Benchmarking Criteria:

Responses of the employees, to Benchmarking Criteria have a trend towards (Do not agree) item. In general, the arithmetic mean is (2.55) with a standard deviation of (0.31).

Hypothesis was T- tested to confirm the validity of the results; responses of the employees were given 3 points versus (<3) alternative hypothesis. The test result was (P = 0.015) which means that null hypothesis (=3) was rejected and alternative hypothesis (<3) was accepted, ($\alpha=0.05$).

Finding

The researcher reviewed LIDCO related monthly reports, and conducted questionnaire as well the results concluded are as follows:

First: Analysis of Questionnaire:

Questionnaire was divided into three main sections, according to the three hypotheses adopted:

Table (4): Results of questionnaire analysis [S.: Researchers]

Criteria	M	S	T	P
Application of the Total Quality Management	2.6	0.45	5.506	0.00
Quality Culture	2.37	0.49	3.269	.002
Customer Satisfaction	2.82	0.48	1.174	0.23
Leadership	2.65	0.26	1.841	0.06
Continuous Improvement	2.39	0.11	3.273	.002
Application of the Performance Quality	2.58	0.41	5.510	0.00
Relevance	2.66	0.53	1.488	.140
Efficiency	2.52	0.37	3.505	.001
Effectiveness	2.57	0.44	2.544	.018
Application of the Competitive Position	2.65	0.22	1.844	0.06
Market Share	2.68	0.24	1.761	.080
Profit Growth	2.59	0.27	3.270	.002
Benchmarking	2.55	0.31	2.544	.015

- Application of Total Quality Management Criteria:

The results of this section showed that Total Quality Management Criteria is not applied by LIDCO. The trend is [(Do not Agree) (P = 0.00), (M = 2.50), (S = 0.45)].

The results of the TQM Criteria shown in fig. (4).



Fig. (4): Total Quality Management Criteria Results

This confirms the validity of the first hypothesis “Failure to apply Total Quality Management Criteria to LIDCO management has a negative impact on performance evaluation effectiveness for construction projects”.

- Application of Performance Quality Criteria:

The results of this section showed that Quality Performance Criteria is not applied by LIDCO. The trend is (Do not Agree) [(P = 0.00), (M = 2.58), (S = 0.41)].

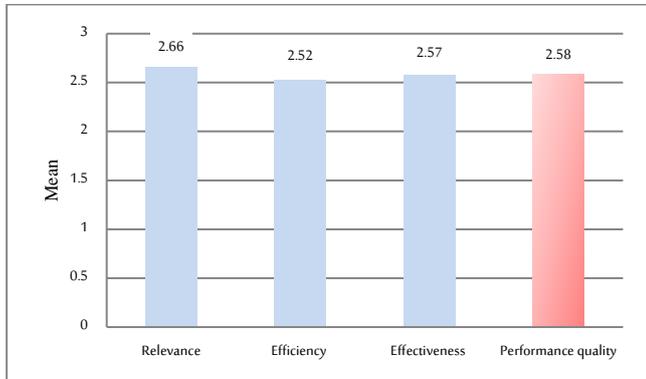


Fig. (5): Performance Quality Criteria Results

- Application of Competitive Position Criteria:

The results of this section showed that Competitive Position Criteria is not applied by LIDCO. The trend is (Agree some-what) [(P = 0.006), (M = 2.61), (S = 0.21)].

This confirms the validity of the first hypothesis “Failure to apply Competitive Position Criteria to LIDCO management has a negative impact on performance evaluation effectiveness for construction projects”. The results of the Competitive Position Criteria shown in fig. (6)

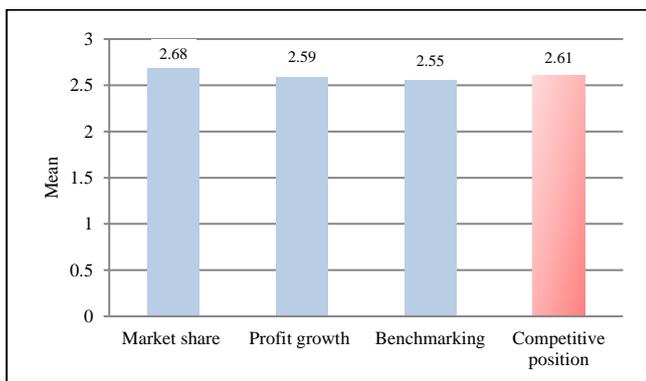


Fig. (6): Competitive Position Criteria Results

Second: Analysis of the Result using (SWOT):

The results to determine internal and external factors affecting LIDCO according to SWOT analysis are Follows:

Table (5): SWOT Analysis Result

Positive Points	
Internal Factors	External Factors
Strengths	Opportunities
Customer satisfaction	Market Share
Leadership	
Relevance	
Weaknesses	Threats
Quality Culture	Profit Growth
Continuous Improvement	
Efficiency	Benchmarking
Effectiveness	
Negative Points	

Discussion:

Thorough study of the questionnaire results leads to the following conclusion:

First; Negative Points Against LIDCO Management:

- LIDCO has no written vision or mission.
- LIDCO does not take into account the demands of its employees, and surrounding community.

- LIDCO’s employees do not participate in formulating of its goals.
- Most of the employees do not have a good background on the concept of Total Quality Management.
- LIDCO does not conduct awareness seminars for employees to spread the concept of Total Quality Management.
- LIDCO management is not interested in selecting the external teams (implementers, partners, consultants) according to standards and specifications of high quality.
- LIDCO management is not interested in development of the capabilities of its employees.
- LIDCO management is not interested to have all managements levels responsible for continuous improvement.
- LIDCO Management does not encourage its employees to be innovative and creative in their work.
- LIDCO management is not interested to provide information and knowledge to its employees.
- LIDCO Fails to identify the factors of internal and external risks that could affect the implementation of its projects.
- LIDCO management does not allocate adequate budget for scientific research and development.
- LIDCO Project financial management does not follows the proper procedures.
- Wages and bonuses are not commensurate with work required from each position.
- LIDCO employees are not fully aware of their rights and duties.
- LIDCO management is not interested to provide the means to promote sense of belonging and allegiance among employees of the LIDCO.
- The LIDCO does not have a guide to job descriptions.
- Poor profit increase.
- LIDCO management has been unable to invest in capital assets.
- LIDCO management does not follow up its competitive position.

Second: Positive Points for LIDCO Management:

- LIDCO is strongly and completely committed to its customers.
- Customer satisfaction is a constant strategic objective for LIDCO management.
- Design and implementation of projects are based on the desires and needs of customers.
- LIDCO management is interested in implementing its projects according to the approved specifications and standard.
- LIDCO chooses their suppliers based on the quality of the material they provide.
- Leading staff are keen to organize work and assign tasks appropriately.
- Work team leaders are distinguished for their quick-wittedness and good manners.
- Project execution plan is clear to employees and it facilitates its implementing operations.
- Work plan is characterized as flexible to accommodate all probable variations.
- LIDCO Management is keen to acquire modern and sophisticated technology compared to competitors.
- Project success will, compared with other competitors, improve LIDCO chances to conclude new contracts.
- The diversity LIDCO's projects have increased its market share percentage.
- LIDCO Management’s compliance with international quality conditions and standards is its number one priority that have contributed to the increase of its market share.

Conclusions:

The study on LIDCO shows that LIDCO experienced delays in implementing its projects according to their project execution time plans. Such delays were because LIDCO did not conduct an effective evaluation of the strategic factors that had an impact on the implementation of such projects.

The study clearly shows:

1. Total quality criteria were not applied to LIDCO project construction, which cast negative impact on the evaluation effectiveness of LIDCO performance of project construction management.

2. Performance quality criteria was not applied to LIDCO project construction, which cast negative impact on the evaluation effectiveness of LIDCO performance of project construction management.
3. Competitive position criteria were not applied to LIDCO project construction, which cast negative impact on the evaluation effectiveness of LIDCO performance of construction project management.
4. Poor efficiency and effectiveness in project construction management due to lack of spreading and application of total quality criteria.
5. Customer satisfaction led to an increase in LIDCO's market share.
6. Decrease in profit growth due to Lack of continuous improvement and benchmarking.

Recommendations:

Based on the conclusion reached by the researcher, it appears clear and evident that there is a weakness in the management of the LIDCO to address some of the points, and not to take advantage of some of the points owned by the LIDCO and not exploited properly. Therefore, the researcher has developed some of the recommendations that would improve the effectiveness of the administrative performance of the LIDCO's construction projects, and these recommendations are:

1. Address the weaknesses the LIDCO, so that it is:

- Educate and training employees to the concept of total quality management because of its great benefits in raising the quality of performance of the workers.
- Employee participation in the formulation of a message and the vision and objectives of the LIDCO.
- Promote employees to continuous improvement and innovation in their field.
- Work to raise the administrative efficiency of the LIDCO by providing requirements and assistance for the implementation of the business properly, as well as the allocation of a special budget for emergency conditions during the implementation of projects.
- Attention to the employees and to clarify their duties and their rights and raise their spirits and strengthen their affiliation and loyalty to the LIDCO by developing their abilities by giving them courses to strengthen and motivate the man increase their wages and reward.

2. Benefit from the strengths owned by the LIDCO in the following manner:

- Increased investment in the assets of the LIDCO's capital and take advantage of customer satisfaction for the LIDCO's projects even grow the LIDCO's profits.
- Give the powers and possibilities for leaders to raise the level of quality of the performance of employees.
- Implementation of the projects according to the plans, with an emphasis on the development of alternative contingency plans to avoid any problems or difficulties or risks can occur suddenly.

3. Benefit from the opportunities available the LIDCO, through:

- The diversity of the LIDCO's projects and its commitment to the terms and conditions of the international quality standards and possession of modern and advanced technology should be harnessed to enter it in strong competition with competitive companies.
- Attention to publicity and advertising for projects executed by LIDCO, as well as projects under completion in order to increase the LIDCO's sales.

4. Address the threats that facing the LIDCO by:

- Attention to conduct benchmarking with competitive companies in order to maintain and increase market share.
- The LIDCO must develop its projects through a comparison of its projects with company's projects competing.
- Conduct periodic evaluation of projects and scientific manner to address deficiencies first hand.

Proposals for Future Research:

- ❖ The importance of the application of total quality management for construction industry.
- ❖ The possibility of the application of strategic management of construction companies.

- ❖ The importance of strategic management in improving the competitive position of LIDCO.

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