Application of stakeholder theory in procedures for maintenance work for government buildings in Iraq

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Abstract. The renewable nature of projects, especially maintenance projects, requires effective methodologies that are appropriate to the work environment. The stakeholders greatly influence the maintenance projects of government buildings, as they play a large role in the success of these projects. This study aims to find out the applicability of stakeholder theory in the procedures of maintenance work for government buildings in Iraq. A questionnaire was conducted for specialists in the field of building maintenance. Analysis of the questionnaire, which was answered by (75) engineer, revealed that the most influential factors in using the theory of stakeholders in maintenance work procedures are: the competencies of the project manager, ensuring effective communication between the project and the stakeholders, determining the common goals and objectives of the project, trust and mutual respect among stakeholders, assessing the strength of stakeholders, formulating a strategy for dealing with stakeholders, obtaining support from higher authorities, participation of stakeholders in decision-making, proper and frequent communication with stakeholders. Also, the principles that affected the most, according to the questionnaire: the principle of governance, the principle of agency, the principle of entry and exit, the principle of external factors. Two case studies were taken, for maintenance projects for government buildings, to know the reality of the situation of the most important factors and principles, which were obtained from the questionnaire, and to obtain more accurate and realistic data. Through the study, it can be said that the theory of stakeholders can be applied in the procedures of maintenance work for government buildings in Iraq, through which it is possible to develop the reality of maintenance of government buildings.

1. Introduction
Building Projects face many problems due to the deterioration of their components. The maintenance and renovation of buildings is a prerequisite for the role of buildings in community development. The authorities in Iraq allocate certain amounts annually for the maintenance of buildings and often not enough for the maintenance. Preserving the building in its structural, aesthetic and functional condition is the main goal of the maintenance process [1].

Key issues for stakeholders in the major engineering project related to achieving social responsibility for the project[2]. In the construction project, there is an urgent need for inner stakeholders to cooperate in undertaking stakeholder management [3]. The researcher believed that stakeholders help
estimate value by creating multiple relationships that create long-term and sustainable value [3]. Strong collaboration among stakeholders leads to project success. The researcher believes that the project is a temporary organization in which stakeholders achieve their goals together [4].

2. Maintenance
There are several definitions of maintenance in the previous literature. It can be defined as all administrative and technical procedures that ensure that all elements and parts of the building are in an acceptable standard to perform the desired [5]. Maintenance is all administrative and technical procedures, including supervision, to preserve the item or return it to a location that enables it to perform the function for which it was made [6]. Reducing all negative impacts of inactivity and maximizing attachment at a lower cost [7]. There are five main factors affecting the maintenance of public buildings: lack of preventive maintenance, insufficient amounts allocated for building maintenance, lack of a standard for building maintenance, lack of spare parts and components, and lack of response to maintenance requests[8]. Residential building users indicated in the survey that the causes of maintenance problems are: faulty workmanship, design accuracy appropriate to user needs, use of inexpensive and low-level materials; the most influential factor in residential building maintenance is the lack of funding for building maintenance[9]. Cobinah identified another type of factor responsible for poor public building maintenance: age of buildings, insufficient funds, lack of maintenance culture, high maintenance costs, pressure from a number of users on the building, and poor construction and maintenance work carried out by maintenance personnel in the organization[10].

3. Stakeholder theory
The Project Management Institute (PMI) Standards Committee, has defined the project stakeholder as an individual and organization active in the project, or who is affected by the project implementation or the successful completion of the project[11]. Stakeholders are one person or group of people, who influence the outcome or/and operations of the project, as their living environments are affected by the project, negatively or positively, that is, they incur losses or/and obtain a benefit, indirectly or directly [12]. Stakeholders can be defined as the group or individuals, outside or within the organization, who owns a stake or influence the performance of the organization[3]. Considered stakeholder theory, is a theory for ethics and organizational management [13]. Stakeholders have 4 varieties of informal relationships: The cooperative relationship, power/impact relationship, information/knowledge exchange relationship, interpersonal relationship (such as trust and emotional support) [14]. Information/knowledge exchange and communication, it is considered a necessary social network, must be analysed, to obtain the highest performances in the mega construction projects [15].

3.1 Stakeholder theory classification
Many researchers have classified stakeholders according to different issues that suit their work environment. The stakeholder determines and stands out based on the stakeholder having one or more of the following characteristics of the relationship: strength, legitimacy, and urgency [16]. Stakeholders can be categorized according to:

3.1.1. The level of impact on the project
Stakeholders are classified, by project teams, according to the level at which stakeholders can influence the project, and the likelihood of this impact occurring, and therefore project teams assess the impact of stakeholders and predict their potential behavior. There are several differences in this method concerning project stakeholder management, for example the stakeholder impact index, and matrices (strength, advantages or strength, predictability) [17].

3.1.2. Proximity to the project
Stakeholders can also be categorized according to their proximity to the project and their relationship to it: direct or primary stakeholders are those who are directly involved in decision-making and project
operations, but those who work remotely and have no direct relationship to the project are considered indirect, secondary or external stakeholders [18].

3.1.3. Contractual relationships
The researcher classified the stakeholders in the construction project, according to their contractual relationship with the client, into two categories: internal and external stakeholders [19].

4. Methodology
A field survey was conducted to achieve the research objectives, as follows:

4.1. A questionnaire
After reviewing the previous literature, a field questionnaire was conducted. It is one of the methods of collecting non-quantitative information at most from the community. It was conducted in two stages: The first stage: an open questionnaire, where the prepared questionnaire form was discussed with a group of experts to know the accuracy and clarity of the questions asked, with the possibility of modifying them for the research service. The second phase: the closed questionnaire. The questionnaire was distributed, randomly, to a group of engineers with no less than five years of experience, in different specialties related to the maintenance of government buildings, and various educational certificates, and they work in different departments in Iraq and with different positions of department managers, department heads, and others, the sample size was more than 30 people, that is, in line with statistical theories. (100) copies of a questionnaire were distributed, only (78) forms were returned, (75) forms were approved, and 3 forms were discarded due to errors and incomplete information. The questionnaire consists of two axes, the first axis includes personal information (characteristics of the study community), and the second axis includes two questions, one related to the factors affecting the application of stakeholder theory in maintenance work procedures, where a five-point scale was used to know the extent of the influence of the factors, while the second question relates to the reality of the impact of the principles of stakeholder theory to enable the adoption of stakeholder theory as a development method for maintenance, and here a tripartite scale was used. The data obtained were analyzed where the mean, index of relative importance (RII) of factors and principle was calculated for the purpose of knowing which are more important for the purpose of application in case studies. Tables (1) and (2) illustrate the results of the analysis. The Cronbach alpha test was calculated to measure the reliability of the questionnaire, and the result was equal to (0.850) for the entire questionnaire, which indicates an excellent level of reliability. The factors affecting the use of stakeholder theory in maintenance procedures appeared, according to the index of the relative importance of the opinions of the respondents, which are as follows: For the factors of the highest level of importance, the (H) level: project manager competencies (RII 0.96), we believe that the high competence of the manager gives experience to the subordinates and this reflects positively on the project. ensuring effective communication between project and stakeholders (RII 0.89), we believe that effective communication improves the understanding of all parties and thus facilitates the completion of work to the satisfaction of the stakeholders. Setting common project goals and objectives (RII 0.86), it is considered necessary to define goals to accomplish the work while achieving social responsibility. Mutual trust and respect among stakeholders (RII 0.85), it's for sure that the exchange of trust between stakeholders reflects positively on the project. Stakeholder strength assessment (RII 0.83), it goes without saying that this factor is important because their strength means their ability to make changes to projects, so it is very influential in work. Formulation of a strategy for engaging with stakeholders (RII 0.83), we believe that having a strategy that deepens interest in implementing social responsibility. Obtaining support from higher bodies (RII 0.83), obtaining support from higher authorities helps the project manager to face any administrative obstacles or disputes affecting the project. Stakeholder participation in decision-making (RII 0.83), we believe the participation of stakeholders in decision-making reduces objections in the later stages. Proper and frequent communication with stakeholders (RII 0.82), we
believe repeated contact is important to know the needs of stakeholders, to be taken into consideration in the project stages.

As for the factors that came to the second level of importance, the level (M-H); exploring stakeholder needs and expectations (RII 0.79), understanding areas of concern stakeholders (RII 0.78), assessment of stakeholder satisfaction in terms of achieving pre-project expectations (RII 0.78), expectation of stakeholder impact (RII 0.75).

### Table 1. Factors affecting the use of stakeholder theory in maintenance work procedures

| Factors                                                                 | Mean | RII | Level |
|------------------------------------------------------------------------|------|-----|-------|
| Project manager competencies                                           | 4.79 | 0.96| H     |
| assess the strength of stakeholders                                   | 4.13 | 0.83| H     |
| Ensure effective communication between the project and its stakeholders | 4.44 | 0.89| H     |
| Determine the common goals and objectives of the project               | 4.32 | 0.86| H     |
| Explore the needs and expectations of stakeholders                     | 3.95 | 0.79| M-H   |
| proper and frequent communication with the stakeholder                 | 4.08 | 0.82| H     |
| Formulating a strategy for dealing with stakeholders                   | 4.13 | 0.83| H     |
| Mutual trust and respect between stakeholders                           | 4.23 | 0.85| H     |
| Understand the areas of interest of the stakeholders                   | 3.89 | 0.78| M-H   |
| Obtaining support from higher authorities                              | 4.15 | 0.83| H     |
| Anticipate stakeholder impact                                          | 3.76 | 0.75| M-H   |
| Participation of stakeholders in decision-making                       | 4.13 | 0.83| H     |
| Evaluate stakeholder satisfaction in terms of achieving pre-project expectations | 3.89 | 0.78| M-H   |

### Table 2. How realistic are the principles of stakeholder theory, for using the theory in developing maintenance performance

| Principles                             | Mean | RII | Level |
|----------------------------------------|------|-----|-------|
| Governance principle                   | 2.57 | 0.85| H     |
| External factors principle             | 2.15 | 0.71| H     |
| The principle of agency                | 2.51 | 0.83| H     |
| Entry and exit principle               | 2.47 | 0.81| H     |

The principles of stakeholder theory appeared, mentioned in the questionnaire, all-important, and they were as follows:

Governance principle this principle relates to how to amend the rules that govern the relationship between stakeholders and the institution (RII 0.85), we believe that most institutions do not apply this methodology, so this factor is important for adopting this methodology. The principle of external factors (RII 0.71), this principle indicates to anyone who incurs the costs of other stakeholders have the right to become a stakeholder as well and this is stipulated in the definition of the theory of stakeholders. Any person who affects or is affected by the work is a stakeholder. Agency principle
(RII 0.83) that is, the project manager bears the responsibility towards the stakeholders. The principle of entry and exit (RII 0.81), according to this principle, there should be clear rules that define, for example, the rules regarding the hiring and termination of employees should be clear and transparent.

4.2. Case study
A case study was selected for the purpose of realistic implementation of the results reached, and the projects were (Al-Samoud School in Babil Governorate, College of Fine Arts at the University of Wasit / Al-Kut), due to the researcher's ability to access important and necessary data, and the presence of a large number of government buildings that need for maintenance in these government institutions, and because they suffer from poor maintenance that is done at the same time, therefore, the selection of maintenance projects for these institutions is appropriate to verify the correctness of the results. Where a triple scale was used to see the importance of the factors, and the availability of principles.

4.2.1. Al-Sumood School maintenance project
Al-Sumood School was built in 1974, on an area of land estimated at about (2000) square meters, in Babel Governorate / Al-Musayyib District, The maintenance project was implemented by the Babil Education Directorate, at a cost of (300) million Iraqi dinars, and the last time the school was renovated was (10) years ago.

4.2.2. Maintenance project of the College of Fine Arts
The College of Fine Arts is located in Wasit / Al-Kut governorate, with an area of (1100) square meters. The work was carried out within the projects of the investment plan for the University of Wasit, at a cost of (800) million Iraqi dinars, and the last time the building was restored was 22 years ago.

A set of questions were directed to the supervising authority of the two above-mentioned projects, and the results of the answers were analyzed as shown in Tables (3), (4).

| Questions                                                                 | Mean |
|--------------------------------------------------------------------------|------|
| The importance of the efficiency of the project manager in your project,  | 3    |
| what degree check her in your project?                                   |      |
| What the strength of the stakeholders in your project, what degree       | 2.5  |
| achieved in your project?                                                |      |
| Does the existence of effective communication between the project and the | 3    |
| stakeholders affect your project, to what degree is it achieved in your  |      |
| project?                                                                 |      |
| It is the identification of common goals and objectives in your project, | 2    |
| what degree check it in your project?                                    |      |
| Is there a proper and frequent communication with the stakeholder in your | 3    |
| project, what is the degree of achievement in your project?              |      |
| Is there a strategy for dealing with stakeholders in your project, to    | 2.5  |
| what degree is this achieved in your project?                            |      |
| Is there mutual trust and respect among stakeholders in your project,    | 2.5  |
| what degree of achievement in your project?                              |      |
| Do not get support from higher authorities in your project, what degree  | 3    |
| achieved in your project?                                                |      |
| Are stakeholders involved in decision-making in your project? What is   | 2.5  |
| the degree to which it will be achieved in your project?                 |      |
| Average                                                                  | 2.67 |
After analyzing the answers of the supervisors of the two maintenance projects, for the study cases, the total average of factors affecting the use of the stakeholder theory was equal to (2.67), and because we used the triple scale to obtain the opinion of the supervisory committee, this means that (2.67) is located between the medium and the important and the closest to the important, which means in principle, the stakeholder theory and according to the case studies; achieve a significant score; that is, it is required to use it.

By analyzing the responses of the supervisors of the two maintenance projects, we found that the overall average of the principles on which the stakeholder theory depends is (1.88), and since we use a triple scale to obtain the opinion of the supervisory committee, that is, the average is (1.88) between the average and the available, which means that the average is between the average and the available, which means that the principles are close to availability, and this means that it is possible to achieve a theory Stakeholders score above average which is a good percentage.

Thus, it can be said that the stakeholder theory can be applied in maintenance work procedures because its factors are important and principles are available.

| Table 4. The analysis of the availability of stakeholder theory principles according to the case studies. |
|-----------------------------------------------|--------|
| Questions | Mean |
| To what extent is the principle of governance available in your project so that we can use the stakeholder theory to develop maintenance performance? | 1.5 |
| To what extent is the principle of external factors available in your project so that we can use the stakeholder theory to develop maintenance performance? | 2.5 |
| The extent of the availability of the principle of the agency in your project so that we can use the theory of stakeholders in the development of the performance of maintenance? | 2 |
| To what extent the principle of entry and exit is available in your project so that we can use the stakeholder theory to develop the performance of Maintenance? | 1.5 |
| Average | 1.88 |

By analyzing the responses of the supervisors of the two maintenance projects, we found that the overall average of the principles on which the stakeholder theory depends is (1.88), and since we use a triple scale to obtain the opinion of the supervisory committee, that is, the average is (1.88) between the average and the available, which means that the average is between the average and the available, which means that the principles are close to availability, and this means that it is possible to achieve a theory Stakeholders score above average which is a good percentage.

Thus, it can be said that the stakeholder theory can be applied in maintenance work procedures because its factors are important and principles are available.

5. Conclusion
This study attempted to present the stakeholder theory as a methodology for developing maintenance work procedures for government buildings, as most government building maintenance projects are concerned with the traditional financial aspect, i.e. the cost of work, and neglect other aspects such as social and environmental aspects.
This study clarified through the results of the prepared questionnaire that the most important factors affecting the application of stakeholder theory in the maintenance work procedures for government buildings are: the competencies of the project manager, ensuring effective communication between the project and the stakeholders, setting common goals and objectives for the project, trust and mutual respect among stakeholders. Assess the strength of stakeholders, formulate a strategy to engage with stakeholders, obtain support from higher authorities, stakeholder participation in decision-making, and correct and frequent communication with stakeholders.
As for the most influential principles according to the field survey: the principle of governance, the principle of agency, the principle of entry and exit, the principle of external factors. According to the case studies that have been taken, to Know realistically and more accurately the extent of the influence of factors and the extent to which the principles of stakeholder theory are available, so the stakeholder theory can be considered feasible in maintenance projects for government buildings, and this means that it can be used to develop the reality of maintenance in government buildings in Iraq.
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