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Article

Risk Identification of Building Construction Projects in Egypt

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Abstract: Risk identification is integral to construction management. The severe consequences of identified risk factors on time and cost performance can be addressed by improved risk management. The identification and preparation of responses to risk factors affects the risk management process directly and indirectly. Recent changes in the valuation of the Egyptian currency against foreign currencies during the last year and measures to cut down on the importation of engineering materials and equipment have had significant effects on the existing and recognized regulations concerning construction in Egypt. A pilot survey with expert engineers is a crucial step in completing research. In this research study, 15 experts were asked to discuss the collected risk factors from previous studies to verify the workability of these factors in Egypt. Thirty-five risk factors were selected during the pilot survey, which was distributed to 95 participants. To facilitate the analysis process, the collection was based on a five-point Likert scale. Therefore, redefining and arranging the risks according to the current circumstances is the main objective of this study. The proposed model identified different high-risk factors that could cumulatively affect overall performance, such as funding problems from contractors, material price fluctuations, unrealistic estimates of the duration of project activities, and shortages of construction materials in the market. Thus, to help stakeholders achieve project success, these high-risk factor components should be identified and controlled duly.

Keywords: risk management; risk identification; construction project; quantitative risk analysis

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1. Introduction

The labor market and society are generally affected by the construction industry. Therefore, it has the competitive advantage of being significant to global and local economies. As such, strict policies and guidelines should be enacted to monitor the performance of construction projects. A typical project in the construction field begins with the project owner developing the concept, which is then translated into the design of a consultant. The project is finally executed by a contractor. Such involvement of multiple parties increases the inherent risks that can jeopardize a project's success. These risks often affect the performance metrics of time and cost for construction projects. In addition, risks in construction projects generally change across different project stages [1].

In the initial stage, errors in design and design synchronization represent safety and performance risks to a project. A project initially faces risks to its safety and performance due to design synchronization and mistake hazards. At that stage, such vulnerabilities are assigned to engineering consultants and clients because the design is their duty. As the design is their responsibility at that point, such vulnerabilities are blamed on project owners or consultants. During the construction phase, the risks attributed to contractors pose a greater threat to a project. Such risks include buying products with a long lead time [2] and the use of conventional construction techniques. The creation of value, employment, and contributions to the gross national product (GDP) make the construction sector a significant contributor to the economic growth of any country. Thus, construction project risks have a cost impact. For example, more than 15% of changes in quantity have a serious/significant cost impact [3].

Many hazards that affect various stakeholders result in the complexity of construction projects. Thus, project goals cannot be attained without risk management. Maximizing the likelihood and effect of positive events while minimizing the probability and effect of negative events is the goal of project risk management. Thus, it guarantees that project objectives are met and positive effects on goals are maximized at every opportunity [4]. Assessing and managing these risk occurrences to decrease or eliminate the incidence and influence of negative effects while promoting positive effects is the task of risk management. When project risks rise, management and control become increasingly difficult. Numerous failures may occur throughout construction of the project due to project risks. However, a complete definition of project risks has not yet been developed because they are difficult to measure. To boost economic growth and generate more job opportunities, developing countries, such as Egypt, must build and implement projects because they need significant investment. Therefore, any expenditures (e.g., delays, assets, and budget) will result in significant financial losses even if the numerous risk factors associated with these projects will greatly affect their completion time without compensating for risk expenses [5].

The increasing technical and legal complexity of building construction projects results from an increasing amount of risk, with negative effects on their execution also increasing [6]. Thus, these risks, if not handled properly, might have major negative implications, such as project failure. However, unforeseen risks and losses may jeopardize the success of many construction projects, as suggested by a considerable amount of data. Internal and external factors can contribute to project failures not considered during project construction [7]. Uncertainties and risks characterize projects, and they are typically constructed in a dynamic and complex environment, potentially worsening the risks' consequences. A lack of economic basis for the project's operation, reduced efficiency, and dissatisfaction are among the most common issues [8]. The construction industry's close relationships with other economic sectors create its importance because of the major effects of these strong linkages. No construction activity is risk-free because the construction industry is complicated, dynamic, and demanding. According to construction practitioners and scholars, the construction industry incurs higher risks than other industries due to its complexity [9].

The main contribution of this study to practice and research is to identify and prepare responses to risk factors based on the current changes in the valuation of the Egyptian currency against foreign currencies. Therefore, this study is considered an update to previous studies due to the current circumstances. Thus, the ranking of the importance of risk factors will drastically change.

2. Materials and Methods

This study analyzed collected data concerning the risk factors from previous research related to the construction field in Egypt after discussion with expert engineers and ranking from participants in construction. This study aims to cover the gap in risk identification and assessment by conducting an evaluation of the Egyptian currency against foreign currencies in 2022 and 2023.

2.1. Data Collection

Risk factors from previous research were collected so they could be discussed with expert engineers in construction. This step is essential for the success of the next step, which is a focus group discussion to determine the risk factors related to the construction field in Egypt, enabling the effective completion of the study.

The success of any project is due in large part to project management, which has become a constantly growing trend in many organizations. However, in a dynamic environment, although the effectiveness of the project management method and the quality of the management team influence the project's success, risk management is just as integral. Uncertainty and risk are essential to project management. Certain benefits can be achieved if risk management can be implemented correctly. The sustainability of a construction company also relies on risk management. One of the most important management decisions is the appropriate method of project implementation because it directly affects a project's success [10,11]. Therefore, to achieve the expected level of accuracy in contingencies, understanding the risk scenarios of construction projects is crucial. This section presents previous research to understand risk scenarios. A changeable and dynamic project budget is primarily caused by price fluctuations in construction costs such as building materials and human resources [12]. Understanding of the overrun's root causes can be obtained from information provided by experts, which saves time and effort during data collection and requires significantly less probabilistic data [13].

Inherent risks that affect and reduce the overall profitability of construction projects during the execution phases are involved in construction work. Stakeholders concern themselves with the likelihood of an actual risk event or a combination of risk events during construction [14]. Many variables are involved in profitability-influencing risk factors; thus, determining cause and effect, interdependencies, and correlations becomes difficult. Nevertheless, in decision making and performance, these profitability-influencing risk factors are significant. These profitability-influencing risk factors also affect other construction dimensions, such as supply chains [15], cash flows [16], contingency [17], and the complexity of the project [18].

In complex projects, time extensions that result from multiple causes related to different stakeholders at different project phases constitute construction delays. The causes of delays are related to project partners, including contractors, clients, designers, investors, suppliers, supervisors, laborers, and the government [10]. Some external factors, such as dangerous environments and terrible weather [19], the supply of low-efficiency equipment [20], the productivity of labor which should be enhanced [21], the relationship between the participants of the construction supply chain [22], and inflation/price increases [23], have considerable effects on project performance.

During the execution phase, profit failure can be avoided by investigating the construction process resulting from the occurrence of unpredictable and complicated scenarios. Therefore, to enhance the success and performance of construction projects in terms of profitability, such failure-related factors should be highlighted and discussed. During the execution phase, construction projects are subjected to complicated and unpredictable challenges. Therefore, tools and procedures have been developed by construction organizations to decrease losses and make their projects more profitable. Often, these tools and strategies adopted by firms are the result of the experience and knowledge of the firm's engineers. The construction project's initiation, bidding, contracting, execution, and closing stages are the focus of these profitability-influencing variables. However, holistic assessment of the negative factors has rarely been reported in the published literature [14].

Several factors, such as unpredictable and complicated scenarios, cause profitability variation for different projects across the construction industry. Thus, these situations in construction operations must be evaluated to reduce losses and increase profits. The nature of construction operations, intricate procedures, tough environments, organizational structures and several other factors make profit projection difficult. The presence of many specialist contractors also complicates the construction sector, resulting in fragmented construction projects. Anticipating project cash flow at the outset of a project, which is intimately linked to payment terms and financing schedules, has been a longstanding goal of construction companies. However, because of the various external and internal risks, diverse variables affecting project cash flow [24] for international construction projects often vary, thereby reducing profit margins.

Unanticipated circumstances are used to calculate a project's contingency cost. The project can be broken into major work packages to identify contingency costs. Independent factor analysis is then performed for each work package based on the views of experienced project workers, and potential sources are determined through factor analysis. Each work package's risk-adjusted target cost is consequently determined. Finally, using this goal and base cost estimate, the contingency amount necessary to finish the work package is calculated [14,25].

The major areas explored in this review article are risk identification, assessment, and allocation. Interest rate changes, political interference, financial constraints, and force majeure are some of the most common risks identified by the reviewed literature. Although most studies have identified these risks, it does not mean they are the most critical. The criticality of these risks has been debated by different researchers. Hence, to determine critical risks, further factors such as location and the type of project must be considered. However, the assessment techniques still rely on the more subjective qualitative approaches [26].

The inability to manage risk is the primary reason for project budgets, timelines, and other project goals being exceeded [27]. Numerous scholars who have examined underperformance in construction projects, including cost overruns, schedule delays, and lengthy and expensive conflicts that result in unnecessary claims, have echoed this result. Thus, the identification and classification of project risks, either positive or negative, is important to managing them properly. Positive risks are perceived as opportunities, whereas negative risks are perceived as threats [28]. Therefore, risks need to be promptly identified and analyzed [11]. The success of any project will be reduced by increasing uncertainties in any project; thus, the chances of the project's success will be increased by the application of risk management in the construction project at an early stage. In the Middle East, the construction industry's performance has always remained a matter of concern, and identifying the root causes of cost overruns can reduce negative effects on project performance [29].

Economies worldwide have been motivated to strengthen their socioeconomic aspects in terms of better social conditions, economic strengths, technological prospects, and global recognition, which has been triggered by the exponential rise in global competitiveness. It has also pushed economies to improve their intrinsic conditions, including infrastructure, resulting in the undertaking and execution of large complex projects, or megaprojects, involving substantial funding and spanning over a long time. Typically, complexity requires substantial investment [30,31].

The nature of megaprojects signifies a proneness to risk. A megaproject's failure often results in the collapse of funding agents, substantial financial losses, and the project being postponed long-term or sometimes even abandoned. Optimal policies and control of execution management need to be reinforced because these projects involve multi-billion pound investments and have the probability of being subjected to various risk forces. The longstanding challenge of identifying inherent risks and timely avoidance is especially true with megaprojects given that they are highly dependent on local conditions, social acceptance, and government affirmation [30,32].

2.2. Questionnaire Preparation

This study passed through a few steps to meet the required objectives. The significant factors for time and cost overrun were gathered from previous studies as the first step in preparing our research questionnaires, as discussed in the semi-structured interviews with expert engineers in Egypt described above.

The pilot survey with expert engineers was an important step to properly completing the study [33], and in this study 15 expert engineers discussed the collected time and cost overrun factors from previous studies to verify the workability of these factors in Egypt.

The questionnaires were divided as follows:

- Section 1 included information about the past experiences of the participants and their companies, such as job title/designation, company size and the number of employees in their companies, the annual estimated budget of their companies' projects, and their years of experience in the building of construction projects in Egypt.

- Section 2 was a structured type of survey to collect ratings for delay factors. Measurement of the occurrence frequency, time impact, and cost impact of each factor was based on a Likert scale of five ordinal measures from one to five, as presented in Table 1.
- Section 3 was related to driving mitigation and corrective actions for the top 10 risk factors on the basis of the structured interviews with expert engineers from the construction industry in Egypt.

Table 1. Likert scale for importance/frequency of occurrence.

Category	Never	Rarely	Sometimes	Often	Greatly Often
Rating	1	2	3	4	5

2.3. Questionnaire Distribution

Questionnaires have the advantage of saving time and money in the conducting of research. The addressed persons in this study were employees of all stakeholders in the construction field (i.e., consultants, clients, and contractors) in Egypt in order to discuss time and cost overrun factors from different perspectives. The questionnaires were distributed to 13, 45, 27, and 10 clients, project management consultants, engineering consultants, and contractor companies, respectively, with a variety of experiences, designations, company sizes, and types of projects to derive a clear picture of the construction industry in Egypt. The used technique in this study is a mixed method approach combining quantitative and qualitative data collection and analysis. In terms of execution of the approach, the mixed method approach came in two types. The first type was mixed method research, in which a researcher uses both techniques in data collection and analysis procedures. In this method, the researcher uses quantitative and qualitative data collection techniques, but the obtained quantitative data are analyzed quantitatively and obtained qualitative data are analyzed qualitatively [34,35].

3. Results

The survey questionnaires were collected from 13, 45, 27, and 10 clients, project management consultants, engineering consultants, and contractor companies, respectively, to collect the required data for the time and cost overrun factors from a variety of participants in building projects in Egypt, as presented in Figure 1.

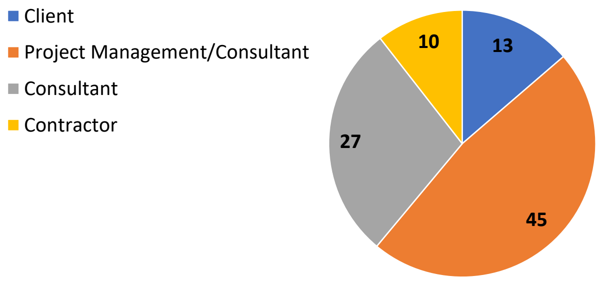

Figure 1. Category of participants.

In terms of the designation of participants, 9 were technical/design engineers, 25 were construction engineers, 45 were planning/cost control engineers, and 16 were from managerial staff, as presented in Figure 2.

The number of employees in the participants' companies was categorized in five categories, namely less than 50, 50–100, 101–300, 301–500, and more than 500, and the number of participants related to these groups was 3, 7, 48, 2, and 35, respectively, as presented in Figure 3.

The yearly budgets for the participants' companies were divided into the following categories: less than EGP 100 million, EGP 100 million to EGP 200 million, EGP 200 million to EGP 1 billion, EGP 1 billion to EGP 4 billion, and more than EGP 4 billion, with the number of participants related to these categories being 10, 22, 28, 16, and 19, as presented in Figure 4.

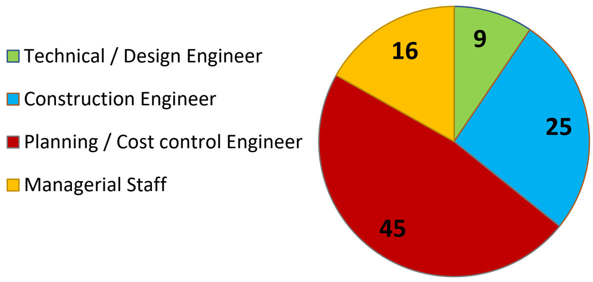

Figure 2. Designation of participants.

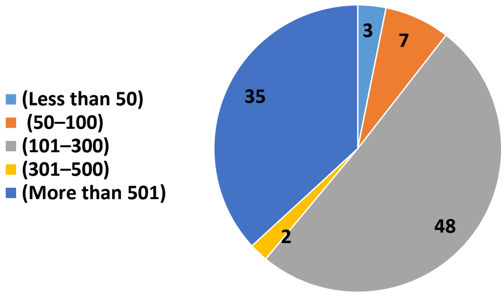

Figure 3. Number of the employees in the participants' companies.

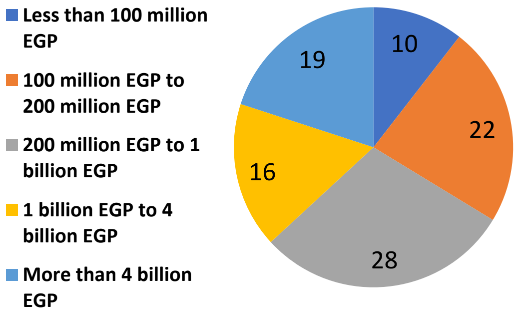

Figure 4. Yearly budget for the participants' companies.

The sample size-based standard formula is indicated in Equation (1).

$$\text{Sample Size} = \frac{\frac{Z^2 * p(1-p)}{e^2}}{1 + \left(\frac{Z^2 * p(1-P)}{e^2 N}\right)} \tag{1}$$

where N refers to size of the population, z refers to the Z-score, e refers to error's margin, and p refers to the standard deviation.

Considering the number of engineering consultants is 7500, the number of project management consultants is 500, and the confidence level is 90% (i.e., Z-score is 1.65), then the accepted sample is 63 participants; however, in this paper, the collected sample was 95 participants.

All the collected risk factors from the previous studies were considered and discussed with the experts. The less impactful factors and those that are less probable were excluded based on the focus interview with experts. The relative importance index (RII), as presented in Equation (2), was used to rank the risk factors.

$$\text{RII} = \sum(\text{W}/(\text{A} \times \text{N})) \tag{2}$$

where W = participants' evaluation on the Likert scale, A = the maximum evaluation on the Likert scale, and N = the number of participants.

The discussed risk factors in this paper were divided into seven categories based on the previous literature review and the expert discussion to facilitate the collection of results from the participants. The following risk factor categories were chosen:

- Risk factors related to planning and controlling.
- Risk factors related to execution.
- Risk factors related to regulation.
- Risk factors related to project finance.
- Risk factors related to communication.
- Risk factors related to unforeseen conditions.
- Risk factors related to resources.

On the basis of the collected results, the RII was calculated for each risk factor's importance and frequency, and the probabilistic measure of the risk's occurrence was quantitatively combined with a measure of the risk's effect [24], as shown in Equation (3). The final result is shown in Table 2, and the serial number for each risk factor was coded in a pair of numbers (I, J), where I and J are the serial number of the group and of the factor, respectively.

$$\text{Risk score} = \text{Pi} \times \text{Ii} \quad (3)$$

where Pi is the probability of the risk's occurrence and Ii is the risk's effect.

Table 2. Ranked significance of the selected risk factors.

SN	Factor	FI	F	II	IR	SI	SR
Planning and controlling							
F(1,1)	Inaccurate site investigations prior to commencing construction	3.23	19	3.28	9	10.61	9
F(1,2)	Inadequate planning—poor site management	3.24	18	2.76	14	8.94	15
F(1,3)	Lack of delivering and connecting utilities services (i.e., electricity, water)	2.84	26	2.59	19	7.36	20
F(1,4)	Unrealistic estimated duration for project activities/phases	4.26	4	3.63	5	15.48	3
F(1,5)	Delay in delivery of materials	3.14	21	3.25	10	10.20	11
F(1,6)	Delay in obtaining permits and licenses	2.77	29	2.48	21	6.88	23
Execution							
F(2,1)	Changing of scope	3.65	9	2.86	12	10.46	10
F(2,2)	Delay in approving design documents	3.09	22	2.67	17	8.27	17
F(2,3)	Delay in performing inspection and testing during the project, excluding final tests	3.25	17	2.80	13	9.11	12
F(2,4)	Delay in performing final inspection	3.07	23	2.28	26	7.02	21
F(2,5)	Inappropriate construction methods	3.43	11	2.43	22	8.34	16
F(2,6)	Lack of quality for the submittals from contractors	3.41	12	1.53	33	5.21	29
F(2,7)	Changing of material specification in the construction phase	4.03	6	3.04	11	12.26	7
Regulation							
F(3,1)	Complicated administration process	4.05	5	1.68	29	6.83	25
F(3,2)	Changing laws, especially those related to the importation and exportation of construction materials	3.77	8	3.61	6	13.61	5
F(3,3)	Changing government regulations	2.25	34	3.65	3	8.23	18
F(3,4)	Strong political opposition/hostility	1.80	35	2.66	18	4.79	31
F(3,5)	Currency exchange rate	3.80	7	3.46	8	13.16	6

Table 2. *Cont.*

SN	Factor	FI	F	II	IR	SI	SR
Project finance							
F(4,1)	Material price fluctuations	4.41	2	3.72	2	16.39	2
F(4,2)	Funding problems from contractors	4.51	1	3.81	1	17.17	1
F(4,3)	Delay in the certification of contractor payments	3.17	20	3.64	4	11.54	8
F(4,4)	Delay in paying staff salaries	2.95	18	2.55	20	7.51	19
F(4,5)	Delay in the certification of consultant payments	2.82	18	2.42	23	6.83	24
Communication							
F(5,1)	Poor communication between clients, consultants, and contractors	3.31	14	2.73	15	9.01	13
F(5,2)	Lack of design requirements	3.48	10	1.75	28	6.09	27
F(5,3)	Misunderstanding of authorities' requirements	3.27	16	1.68	29	5.52	28
Unforeseen conditions							
F(6,1)	Accidental condition (HSE, natural disaster, labor dispute)	2.62	32	1.44	34	3.78	35
F(6,2)	Site conditions (i.e., neighbors' restrictions, etc.)	3.37	13	1.42	35	4.79	32
F(6,3)	Bad weather	2.68	30	1.58	32	4.24	33
F(6,4)	Labor unrest/strikes	2.48	33	1.60	31	3.98	34
Resources							
F(7,1)	Availability of skilled labor	3.31	14	2.73	15	9.01	13
F(7,2)	Availability of equipment	2.87	18	2.41	24	6.93	22
F(7,3)	Shortage of construction materials in the market	4.31	3	3.53	7	15.18	4
F(7,4)	Capability of subcontractors/suppliers	2.83	18	2.36	25	6.68	26
F(7,5)	Possibility of maintaining equipment easily	2.66	31	1.86	27	4.96	30

FI: frequency index; II: impact index; SI: significant index; F: frequency; IR: impact rank; SR: significance rank.

As shown in Table 2, the risk factors are classified according to relative important values: 7 risk factors belonging to the top/highest/extreme risk level category (i.e., 20% of total risk factors), 12 belonging to the high risk level category (i.e., 35% of total risk factors), 9 belonging to the medium risk level category (i.e., 25% of total risk factors), and 7 belonging to the low risk level category (i.e., 20% of total risk factors).

4. Discussion

Many researchers consider using a risk matrix where the x-axis is the frequency/probability value and the y-axis is the impact to be a suitable method to illustrate the significance of risk [24]. The Likert scale presented in Table 1 is able to scale both probability and impact, as presented in Figure 5.

Extreme risk (E)—the risk factors under this category are the greatest obstacle to meeting the project's planned time and budget. High risk (H)—the risk factors under this category might lead to a direct delay in the project schedule as well as cost overruns. Medium risk (M)—could be mitigated by monitoring all the responsible factors and re-evaluating the project milestones. Low risk (L)—the normal procedure of control and monitoring procedures are adequate to avoid the consequences of these risk factors, all the risk categories for the selected factors are presented in Figure 6.

The extreme risk factors based on this study are as follows:

- Funding problems from contractors.
- Material price fluctuations.
- Unrealistic estimated duration for project activities/phases.
- Shortage of construction materials in the market.

- Changing laws, especially those related to importation and exportation of construction materials.
- Currency exchange rate.
- Changes in material types and specifications during construction.

The distribution of extreme risk factors over the groups is as follows: two risk factors are under the project finance group, one risk factor is under the planning and controlling group, one risk factor is under the execution group, two risk factors are under the regulation group, and one risk factor is under the resources group.

A large proportion of the factors are directly or indirectly related to changes in the exchange rate of the local currency, which results in changes to some prices for imported materials, as well as the possibility of obtaining them at contractual prices.

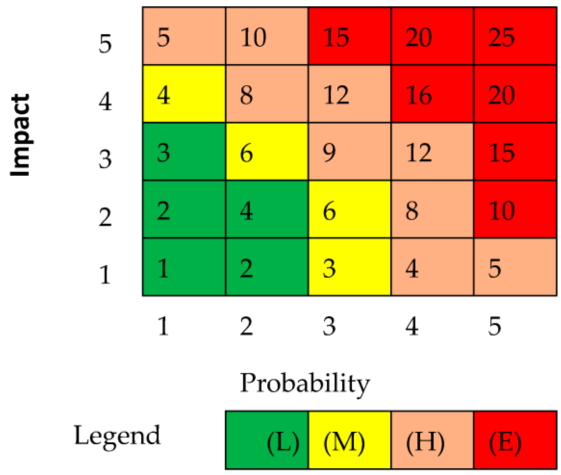

Figure 5. Risk matrix.

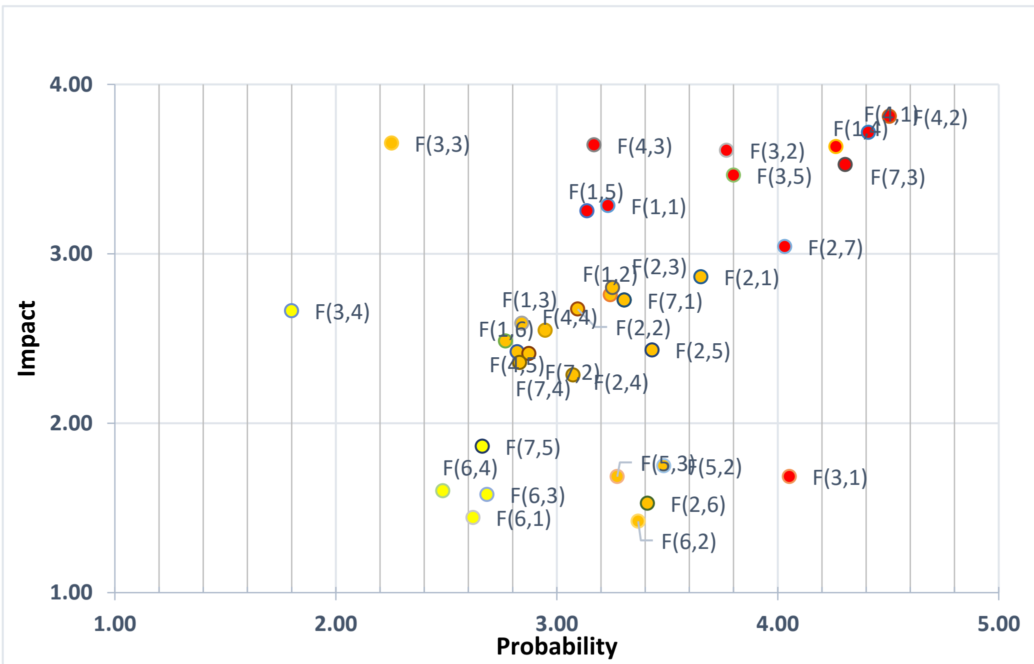

Figure 6. Risk matrix for the selected factors.

4.1. Planning and Controlling Category

There are six factors related to this risk category, as presented in Figure 7. Out of the six factors, one is categorized as an extreme risk factor in the conducted survey. The most important factor in this group is the unrealistic estimated duration for project activities/phases, with factor relying on many assumptions related to resources, the prices of materials, and the availability of resources; thus, it is largely out of our control.

Therefore, it is recommended to use the productivity rates of the company and to start providing materials as early as possible in anticipation of any threat that hinders the start of activities on the site.

4.2. Execution Category

There are seven related risk factors for this category, as presented in Figure 8. Out of the seven factors, one is from the extreme risk factors group obtained in the conducted survey.

The most important factor in this group is changes in material types and specifications during construction, indicating that the specification of the used material should be agreed upon during the design stage to avoid any delay during the construction stage, and in case of any change to the schedule or budget, these specifications should be updated accordingly.

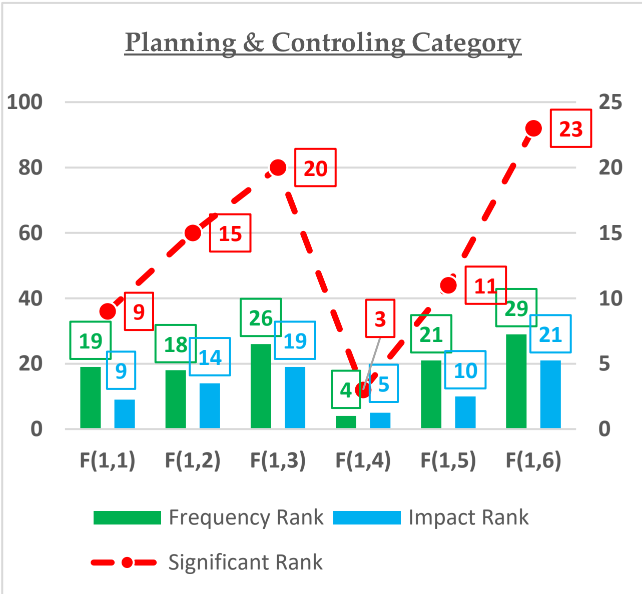

Figure 7. Significant risks in the planning and controlling category.

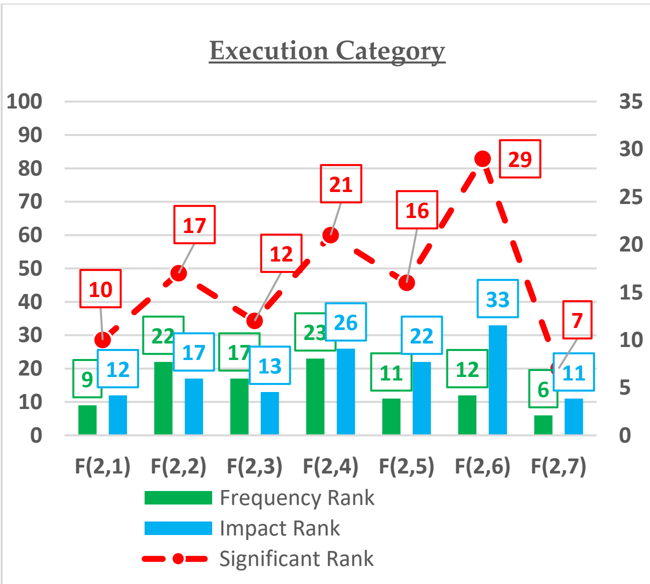

Figure 8. Significant risks in the execution category.

4.3. Regulation Category

There are five related risk factors, as presented in Figure 9. Out of the five factors, two risk factors are from the extreme risk factors group obtained in the conducted survey. The most important factors are changing laws, especially those related to importation and exportation of construction materials, and currency exchange rate, with the importance of these two risk factors resulting from the construction industry in Egypt relying on exports for a large portion of material, especially items related to interior/exterior finishes.

4.4. Finance Category

There are five related risk factors in this category, as presented in Figure 10. Out of the five factors, two of the risk factors are the most important risk factors in this study according to the conducted survey. The most important factors in this study are funding problems from contractors and material price fluctuations. Both of these factors have an effect on a project's budget.

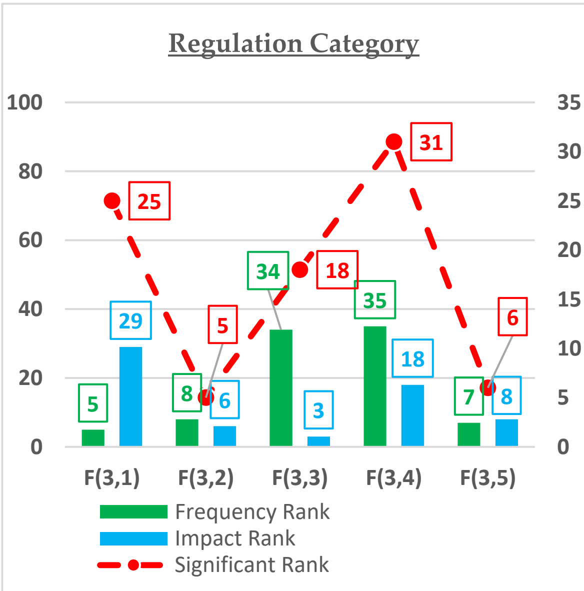

Figure 9. Significant risks in the regulation category.

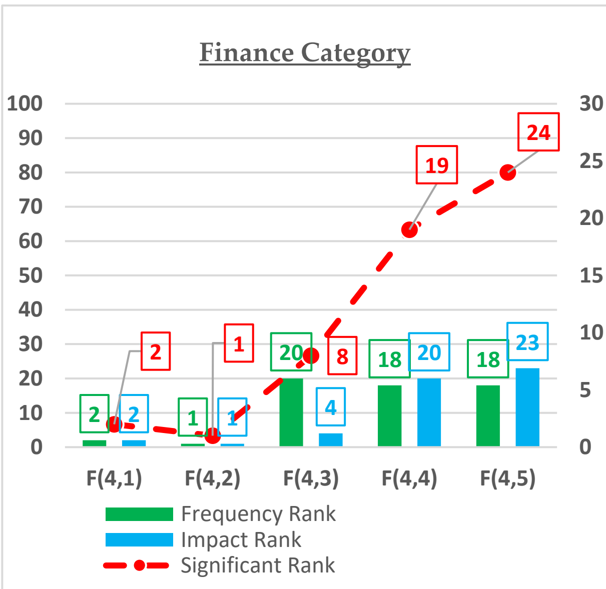

Figure 10. Significant risks in the finance category.

4.5. Communication Category

There are three related risk factors in this category, as presented in Figure 11. There is no risk factor in this group under the extreme risk factors group that has negative repercussions. However, the most important risk factor in this group is poor communication between clients, consultants, and contractors.

4.6. Unforeseen Conditions Category

There are four related risk factors in this category, as presented in Figure 12. This group was the least important group according to the conducted survey.

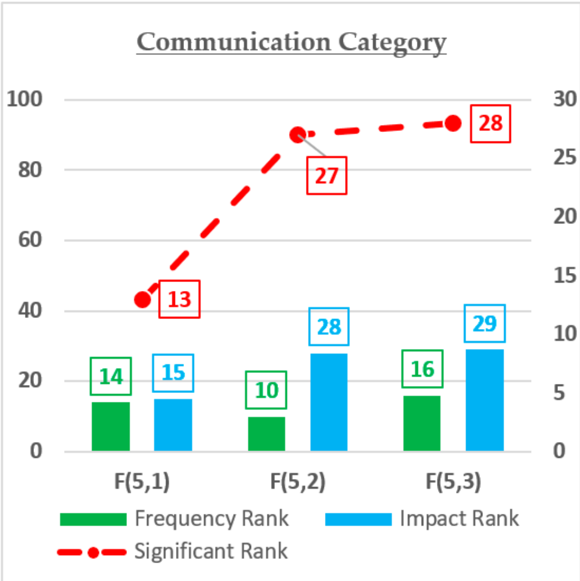

Figure 11. Significant risks in the communication category.

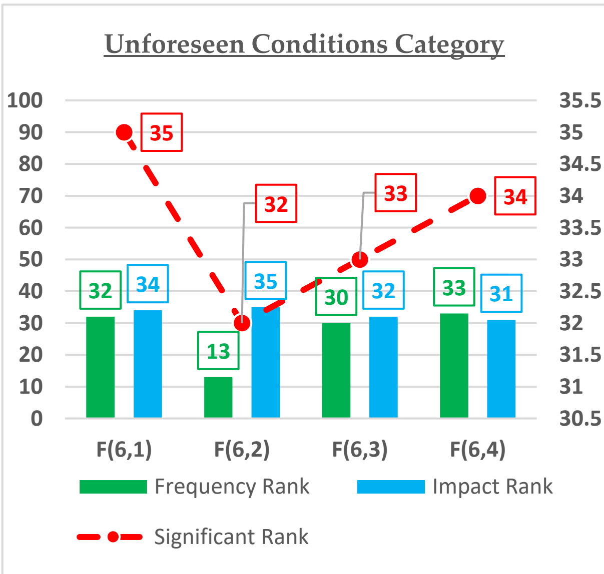

Figure 12. Significant risks in the unforeseen conditions category.

4.7. Resources Category

There are five related risk factors in this category, as presented in Figure 13. The most important risk factor in this category is shortages of construction materials in the market, with the unavailability/shortage of materials having a severe effect on schedule and cost performance.

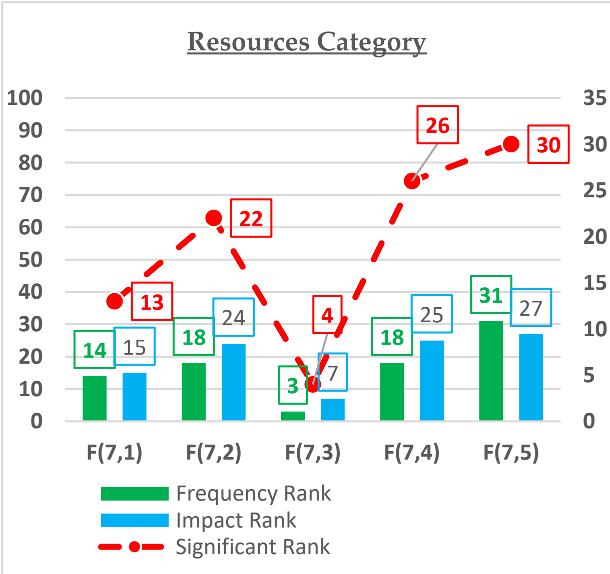

Figure 13. Significant risks in the resources category.

5. Conclusions

This paper studies the likelihood of occurrence and the consequences of the risks in Egyptian building projects. The findings from this research paper include the risk factors that were clustered into seven groups, namely planning and controlling, execution, regulation, project finances, communication, unforeseen conditions, and resources. Extreme risk factors were discussed and the distribution of these risk factors among the groups was as follows: two factors were related to project finance, two factors were related to regulation, one factor was related to planning and controlling, one factor was related to execution, and one factor was related to resources. The risk factors were assessed on the basis of two criteria: probability and impact. The top risks according to their risk significance index score are as follows: funding problems from contractors (17.17), material price fluctuations (16.39), unrealistic estimated durations for project activities/phases (15.48), shortages of construction materials in the market (15.18), changing laws (especially those related to importation and exportation of construction materials) (13.61), the currency exchange rate (13.16), and changes in material types and specifications during construction (12.26). Additionally, it could be asserted that most of the main risk items in Egyptian building projects are related to the local currency exchange rate, which has an effect on the price of exported materials as well as new regulations concerning importation and exportation, which lead to a shortage of construction materials.

5.1. Academic and Practical Contributions

The identification and assessment of time and cost risk factors needs to be continuous updated in terms of defining the responsible parties based on the construction field's circumstances. However, identifying risk factors in construction projects is the most likely source of dispute. Although numerous studies concerning risks in the construction industry have been published over the past few decades, the construction industry still suffers from a shortage of available procedures for risk management in Egypt due to re-evaluation of the Egyptian currency; therefore, gaps and trends are to be recognized by researchers and practitioners in order to improve risk management processes. This study presents a helpful update to the identification and assessment of risk factors in Egypt due to the evaluation of the Egyptian currency against foreign currencies.

5.2. Recommendations for Academic Applications and Practice

Although many studies have been conducted in various aspects to identify and evaluate risk factors, construction projects in Egypt still suffered from various delays during the past two years in Egypt due to the evaluation of the Egyptian currency against foreign currencies. The risk management process must be adequately updated to ensure its operability, especially in the event of any economic changes affecting the construction field.

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