

Project Management Model Using Force Field Analysis a Case Study in the Ministry of Youth and Sports

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Abstract: The research aims to design a model for managing successful projects using the force field analysis technique after identifying the critical success factors for the projects of the Iraqi Ministry of Youth and Sport, as well as diagnosing deviations for the critical success factors ‘as the Ministry of Youth and Sports faces (the spatial limits of the study) in planning, implementing and completing its projects. A number of them exceeded the time limit for implementation and the cost allocated to them. Despite this ‘the ministry still relies on traditional plans to implement its projects without relying on new scientific methods and models. For the purpose of accessing scientific facts, the case study methodology was adopted to collect data and facts and analyze them. Using a number of statistical methods (SPSS V.24; Microsoft Excel), a sample of (3) Ministry projects was selected out of (14) projects for different regions of the country ‘which included Al Habibiya Stadium in the center, Al Mina Stadium in the south and Al Anbar Stadium in the west. The results of the study showed that all the critical success factors were accepted by the ministry ‘and that the Anbar stadium project was the most successful in applying the driving factors ‘and it reached (100%) while the percentage of the main factors for the driving forces in the port stadium was (60%) while the Al-Habibiya stadium project was the percentage of the main factors of the driving forces reached (30%).

1 INTRODUCTION

In response to rapid developments and continuous changes in the business environment, many countries have increasingly initiated large-scale projects at the global level. However, the growing complexity of the environment and intensified competition have made the achievement of successful project outcomes a significant challenge, particularly for strategic projects. At the ministerial level, substantial financial losses are incurred annually due to the recurrence of project-related problems and frequent deviations from planned schedules. It is also observed that several projects extend over multiple years, while some are suspended through ministerial decisions due to budget constraints. This situation negatively affects the overall number of projects that can be completed within a single fiscal year.

Accordingly, project management is considered a fundamental determinant of project success. Since the 1960s, extensive research has been conducted by scholars and practitioners on project success factors and the variables influencing project performance [1].

In this context, the present study investigates how force field analysis can contribute to the development of an effective model for successful project management within the Ministry of Youth and Sports (the research setting). A case study methodology was adopted for data collection and analysis, supported by statistical tools including SPSS V.24 and Microsoft Excel.

2 RESEARCH METHODOLOGY AND PREVIOUS STUDIES

2.1 Research Problem

The shift from traditional methods to approaches that keep pace with global developments and achieve project goals is considered a challenge facing projects, especially governmental ones. The Ministry of Youth and Sports (the spatial boundaries of the research) relies on preparing an initial plan and feasibility study to implement its projects without

relying on other non-traditional scientific methods and models. Additionally, there is weak planning in determining the number of projects that should be completed within a single year. It has been observed that there are a number of projects that have been under completion for years. Before closing and finishing previous projects, new projects are started, which affects both previous and new projects due to insufficient budget allocated for all projects. This delays the completion period until funds are available, so it continues for subsequent years, leaving the ministry's struggle ongoing. Therefore, the study problem can be expressed by raising a number of questions as follows:

- What are the accepted critical success factors for the projects of the Ministry of Youth and Sports?
- What are the driving and restraining forces that affect the success of the Ministry of Youth and Sports projects?
- Are there any deviations or variations between the actual reality and the indicators of the force field in the Ministry of Youth and Sports?
- How does force field analysis help in designing a model for successful project management in the Ministry of Youth and Sports?

2.2 Importance of the Research

The importance of the study is represented in the following:

- Stimulating the ministry's interest in the positive aspects of applying modern models when planning its projects, including the Force Field Analysis (FFA) tool and its ability to assess risks associated with the rise of restraining forces and deviations that occur in projects, their causes and effects, and identifying priorities in order to take appropriate corrective measures for this purpose and transform them into driving forces.
- Assisting the ministry in improving the performance of its projects by reducing deviations and eliminating their causes whenever possible by following the steps and procedures that the study will provide in applying the Force Field Analysis model to its future projects.

2.3 Research Objectives

Based on the questions raised in the problem, the research aims to achieve the following:

- Determine the acceptability of critical success factors for the Ministry of Youth and Sports projects.
- Identify the driving and restraining forces for the critical success factors of the Ministry of Youth and Sports projects.
- Diagnose the deviations or variations in the driving and restraining force factors in the Ministry's projects and identify the sources of uncertainty (deviations).
- Design a model for successful project management using the Force Field Analysis (FFA) tool.⁴

2.4 Research Limitations

The spatial and temporal limitations of the research are as follows:

- Spatial limitations. The Ministry of Youth and Sports, whose general administration is located in Baghdad Governorate, was selected, along with a sample of projects (Al-Habibiya Project, Al-Mina'a Project, and Al-Anbar Project) geographically located in central, southern, and western Iraq respectively, for the practical application of the research.
- Temporal limitations. The practical study in the ministry extended from (1/6/2023) to (15/10/2024)

2.5 Data Analysis Methods

In order to analyze the data and extract results, statistical software packages were used, namely (SPSS V.24 and Microsoft Excel), in addition to the following statistical methods:

$$\text{Arith-mean} = \text{SUM} \frac{\text{Sum (Frequencies} \times \text{Weights)}}{\text{Sum of Frequencies}}, \quad (1)$$

$$\text{Gap degree} = \text{The highest degree} - \text{The weighted arithmetic mean}, \quad (2)$$

$$\text{conformity} = \frac{\text{The weighted arith-mean}}{\text{The highest degree on}} \times 100\%, \quad (3)$$

$$\text{non-conformity} = \frac{\text{Degree of the gap}}{\text{The highest degree on the scale}} \times 100. \quad (4)$$

3 THEORETICAL ASPECT OF THE RESEARCH

Project management involves variations in size, distinctiveness, and difficulty, as well as growing design complexity and stakeholder participation [2], and clients and contractors have substantial obstacles in successfully completing projects. Only 5% of

projects are deemed successful, and there is no agreement on the topic despite the large number of published research on the subject [3]. Furthermore, concentrating on best practices is crucial, and in order to succeed, a lot of work has been done to comprehend and enhance project management techniques. According to one definition, project management is a collection of abilities, activities, and resources that guarantee accountability for establishing, planning, scheduling, and coordinating goals, as well as estimating costs to reach predetermined targets [4]. The word "project management success" can be defined by breaking it down into its component parts, using the researchers' definition of project management, and explaining the idea of effective project management [5]. Planning, organizing, directing, and managing are all part of project management.

3.1 Successful Project Management

The difference between project success and project management success. In their evaluation of the project, project managers generalize the project outcome as "success," and academics typically distinguish between project success and project management success. The distinction between project success and project management success by pointing out that the former is thought to be more challenging than the latter [6]. A successful project helps make project management successful, and project management success is thought to be simpler than project success. The projects differ in terms of measurement, stating that three factors—cost, time, and quality—are the main ways that project success is evaluated [7]. However, the success of the product, which is dependent on a number of variables throughout the operational phase, determines the success of project management.

3.2 Characteristics of Successful Projects

Given the rapid development of project management methodologies, project characteristics change quickly based on changing work requirements, and a project shares certain characteristics [8], [9]:

- Working towards a specific goal.
- A schedule with defined start and end dates.
- Involvement of different professionals across organizational boundaries.
- Doing something that has not been done before within a specific time, cost, and performance requirements

Ref [10] defined that a successful project should achieve the following:

- Fulfill the purpose of the work and Provide benefits to the project owner.
- Meet the needs of owners, users, and stakeholders and the objectives for organizational output.
- Develop a product according to specifications, budget, and schedule.
- Meet the needs of the project team and its supporters and achieve profitability.

3.3 Critical Success Factors

Critical Success Factors (CSFs) are defined as the characteristics, conditions, or variables that can have a significant impact on project success when properly managed or maintained [11]. The circumstances and occurrences in the immediate environment that have an impact on project results are more precisely represented by project success factors. Critical success elements were viewed differently by the researchers [12]. The distribution of project cost, and realistic time estimates from the management team are all considered success factors, critical success factors include (active participation and support, cooperation of the project management team in delivering a project, economic and political stability, management of environmental impacts by the project team, and top management support). As a result of the diversity of factors, all factors were taken into ten groups [13], [14].

4 THE PRACTICAL ASPECT OF THE RESEARCH

This section presents the evaluation results of the acceptability of force field analysis indicators within the Ministry of Youth and Sports. The assessment covers a set of indicators, including planning, management, quality, objectives, project scope, project constraints, realism, capacity and response, risks, as well as political, economic, and environmental factors. The evaluation is conducted using the Saaty scale, as summarized in Table 1.

Table 2 illustrates that the planning indicator recorded the highest arithmetic mean value of 7.75, with a conformity level of 77.5% in the Anbar Stadium project. This result indicates that planning in this project represents a dominant driving force and a key strength. In contrast, the lowest mean value for the planning indicator was observed in the Habibiya Stadium project, with an arithmetic mean of 3.5 and a conformity percentage of 35%, reflecting a weak alignment and a predominance of inhibiting forces.

Regarding the Al-Mina Stadium project, the planning indicator achieved an arithmetic mean of 6 with a conformity level of 60%, indicating a moderate position within the range of driving forces. However,

its overall indicator distribution demonstrates a balance between driving and inhibiting forces, suggesting mixed performance in planning effectiveness.

Table 1: Calculation of the consistency index value for sub-indicators.

Indicators	N	λ_{max}	RI	CI $CI=(\lambda_{max} - n) / n-1$	CR $CR= CI / RI$	Acceptance or rejection
Planning	4	4.0008	0.90	0.0003	0.0003	Acceptable
Management	6	6	1.24	0	0	Acceptable
Quality	2	2	0.00	0	0	Acceptable
Goals	3	3	0.58	0	0	Acceptable
Project scope	2	2	0.00	0	0	Acceptable
Project constraints	3	3	0.58	0	0	Acceptable
Realism	3	3	0.58	0	0	Acceptable
Power and Response	2	2	0.00	0	0	Acceptable
Risks	3	3	0.58	0	0	Acceptable
Political, economic, and environmental factors	3	3	0.58	0	0	Acceptable

Table 2: Level of implementation (planning) for the projects in the study sample.

Al-Anbar Stadium	Al-Mina Stadium	Al-Habibiyah Stadium	Symbol	Indicators	Seq
The grade according to the scale					
Planning					
8	8	4	X ₁	Project planning effectiveness	1
9	5	3	X ₂	Project planning aligns with the ministry's strategic planning	2
8	4	1	X ₃	Follow-up on implementation of planning	3
6	7	6	X ₄	Involving stakeholders in planning and implementation steps	4
7.75	6	3.5	Weighted arithmetic mean		
2.25	4	6.5	Grade gap		
77.5	60	35	percentage of conformity		
22.5	40	65	The percentage of non-conformity		

Table 3: Level of application of the (sample management) indicator for the projects in the study.

Al-Anbar Stadium	Al-Mina Stadium	Al-Habibiyah Stadium	Symbol	Indicators	Seq
The grade according to the scale					
Management					
9	8	6	X ₅	Negotiation	1
9	9	8	X ₆	Communication	2
8	6	5	X ₇	Goal-oriented	3
4	9	2	X ₈	Adaptability (internal and external environment)	4
6	8	6	X ₉	Knowledge and skills (technical, managerial, intellectual, human)	5
8	8	7	X ₁₀	Preparing estimated budgets for the project	6
7.33	8	5.5	Weighted arithmetic mean		
2.77	2	4.5	Grade gap		
73.3	80	55	percentage of conformity		
27.7	20	45	The percentage of non-conformity		

Table 3 indicates that the management indicator achieved the highest arithmetic mean of 8 with a matching percentage of 80% in the Al-Mina Stadium project. This result suggests that management in this project represents a key driving force and a significant organizational strength. In contrast, the lowest mean value for the management indicator was recorded in the Al-Habibiya Stadium project, with an arithmetic mean of 5.5 and a matching percentage of 55%, reflecting comparatively weaker performance. For the Al-Anbar Stadium project, the management indicator recorded a mean value of 7.33 with a matching level of 73.3%, indicating that it remains within the range of driving forces.

Table 4 presents the results for the quality indicator, where the highest arithmetic mean of 9.5 and a matching percentage of 95% were observed in the Al-Mina Stadium project. This demonstrates that quality represents one of the strongest driving forces in this project. The lowest value for quality was recorded in the Al-Habibiya Stadium project, with a mean of 7.5 and a matching percentage of 75%. In the Al-Anbar Stadium project, the quality indicator achieved a mean of 8.5 with a matching level of 85%, indicating that it is consistently within the range of strengths.

Table 5 shows that the objectives indicator reached the highest arithmetic mean of 9.7 with a matching percentage of 97% in the Al-Mina Stadium project, indicating that project objectives constitute a

major driving force and organizational strength. The lowest mean value was 8 with a matching percentage of 80% in the Al-Habibiya Stadium project. For the Al-Anbar Stadium project, the objectives indicator achieved a mean of 9.3 with a matching level of 93%, confirming its classification as a strong driving force.

Table 6 illustrates that the political, economic, and environmental factors indicator recorded the highest arithmetic mean of 8.7 with a matching percentage of 87% in the Al-Anbar Stadium project, indicating that these external factors act as driving forces in this context. Conversely, the lowest value was observed in the Al-Habibiya Stadium project, with an arithmetic mean of 1 and a matching percentage of 10%, reflecting a dominant presence of inhibiting forces. In the Al-Mina Stadium project, the mean value of 4.7 indicates that political, economic, and environmental factors predominantly function as inhibiting forces.

This study applies the force field analysis model to three projects: the Al-Habibiya Stadium Project, the Al-Mina Stadium Project, and the Al-Anbar Stadium Project within the Ministry of Youth and Sports. The force field model results for the Al-Habibiya Stadium project are presented in Figure 1, based on the extracted data. Similarly, Figure 2 illustrates the application of the model to the Al-Mina Stadium project, while Figure 3 presents the results for the Al-Anbar Stadium project.

Table 4: Level of application of the (quality) indicator for the projects in the study sample.

Al-Anbar Stadium	Al-Mina Stadium	Al-Habibiya Stadium	Symbol	Indicators	Seq
The grade according to the scale					
Quality					
9	10	8	X11	Local project specifications	1
8	9	7	X12	International Project Specifications	2
8.5	9.5	7.5	Weighted arithmetic mean		
1.5	0.5	2.5	Grade gap		
85	95	75	percentage of conformity		
15	5	25	The percentage of non-conformity		

Table 5: The level of application of the (objectives) indicator for the projects in the study sample.

Al-Anbar Stadium	Al-Mina Stadium	Al-Habibiya Stadium	Symbol	Indicators	Seq
The grade according to the scale					
Objectives					
10	10	8	X13	The main objective of the project	1
9	9	7	X14	The sub-goals of the project	2
9	10	9	X15	Stakeholder objectives	3
9.3	9.7	8	Weighted arithmetic mean		
0.7	0.3	2	Grade gap		
93	97	80	percentage of conformity		
7	3	20	The percentage of non-conformity		

Table 6: The level of application of the indicator (political, economic, and environmental factors).

Al-Anbar Stadium	Al-Mina Stadium	Al-Habibiyah Stadium	Symbol	Indicators	Seq
The grade according to the scale					
Political, economic, and environmental factors					
9	4	1	X29	political	1
8	3	1	X30	economic	2
9	7	1	X31	environmental	3
8.7	4.7	1	Weighted arithmetic mean		
1.3	5.3	9	Grade gap		
87	47	10	percentage of conformity		
13	53	90	The percentage of non-conformity		

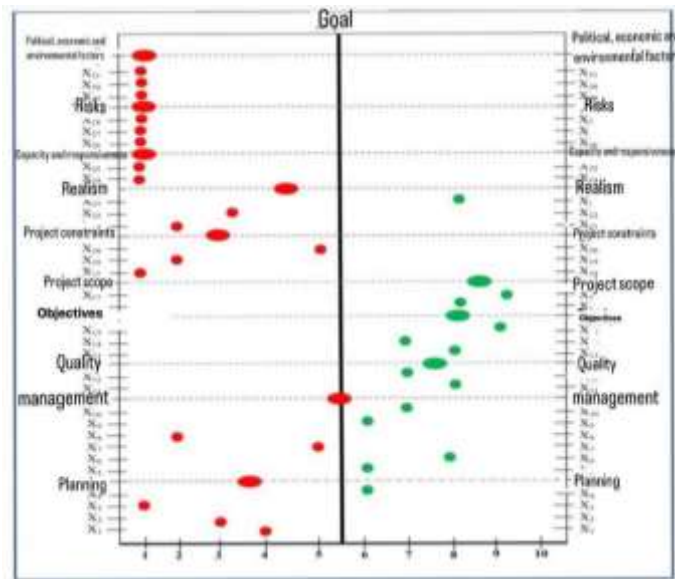


Figure 1: Application of the force field model to the habibiya stadium project.

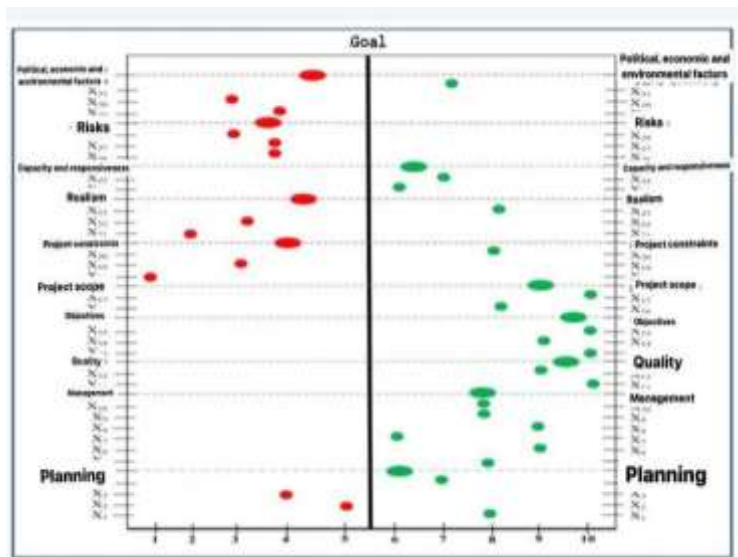


Figure 2: Application of the force field model for al-mina stadium project.

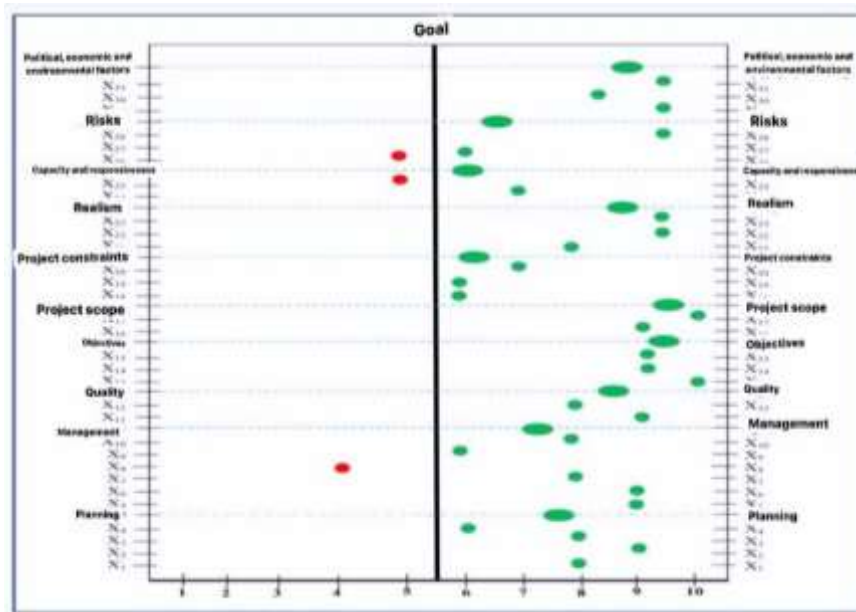


Figure 3: Application of the force field model to the anbar stadium project.

5 CONCLUSIONS

The findings indicate that the Ministry has historically exhibited limited adoption of advanced methods and analytical models prior to project initiation, which results in uncertainty regarding project outcomes in terms of success or failure. In addition, insufficient attention is given to identifying and analyzing critical success factors and their influence on project performance. As a consequence, project execution tends to rely predominantly on initial planning documents, while neglecting essential contextual and operational details that may contribute to project failure.

Furthermore, the absence of continuous training programs for project managers limits their ability to effectively manage influencing factors before, during, and after project implementation. This includes the inability to transform inhibiting factors into driving forces that support project success and adaptability to development requirements. Reliance on static initial plans further reduces the capacity to implement corrective or strategic solutions during project execution.

Another observed weakness is the insufficient utilization of lessons learned from previous projects. Post-project evaluations are not systematically conducted to identify root causes of failure or underperformance, resulting in the repetition of similar issues across successive projects without corrective action or institutional learning.

Despite these limitations, there is a clear interest among ministry staff in applying structured checklists to identify gaps between actual project performance and critical success factors. The results also indicate that the project scope, objectives, and quality indicators consistently fall within the strength domain across all three analyzed projects, reflecting the ministry's commitment to defining these elements prior to project commencement.

REFERENCES

- [1] C. Cruz Villazón, L. Sastoque Pinilla, J. R. Otegi Olaso, N. Toledo Gandarias, and N. López de Lacalle, "Identification of key performance indicators in project-based organizations through the lean approach," *Sustainability*, vol. 12, no. 15, 2020, p. 5977, [Online]. Available: <https://doi.org/10.3390/su12155977>.
- [2] N. Ramlee, N. J. Tammy, R. N. H. Raja Mohd Noor, A. Ainun Musir, N. Abdul Karim, H. B. Chan, and S. R. Mohd Nasir, "Critical success factors for construction project," in *AIP Conference Proceedings*, vol. 1774, no. 1, 2016, p. 030011, [Online]. Available: <https://doi.org/10.1063/1.4965067>.
- [3] M. Elmezain, W. H. W. Baduruzzaman, and M. A. Khoiry, "The impact of project manager's skills and age on project success," *Brazilian Journal of Operations & Production Management*, vol. 18, no. 4, 2021, pp. 1-16, [Online]. Available: <https://doi.org/10.14488/BJOPM.2021.017>.

- [4] R. K. Jumaa and A. S. Khaleel, "Evaluation of the application of quality management systems in projects quality management guidelines according to the specification ISO 10006:2017: A case study in the Department of Engineering Construction," *Journal of Techniques*, vol. 4, no. 3, 2022, pp. E87-E98, [Online]. Available: <https://doi.org/10.51173/jt.v4i3.514>.
- [5] A. Y. Taher, S. Kurnaz, and S. R. Ahmed, "Optimizing Hybrid Energy Systems: Employing Smart Monitoring Networks with IoT Integration," 2024 8th International Symposium on Multidisciplinary Studies and Innovative Technologies (ISMSIT), pp. 1-7, Nov. 2024, doi: 10.1109/ismsit63511.2024.10757232.
- [6] L. D. Miran, et al., "The Role of Artificial Intelligence in Enhancing English Language Communication and Operational Efficiency in Logistics and Transportation Systems," 2024 8th International Symposium on Multidisciplinary Studies and Innovative Technologies (ISMSIT), pp. 1-8, Nov. 2024, doi: 10.1109/ismsit63511.2024.10757183.
- [7] M. Alsaadi, M. T. Almashhadany, A. S. Obaed, H. B. Furajjl, S. Kamil, and S. R. Ahmed, "AI-Based Predictive Analytics for Financial Risk Management," 2024 8th International Symposium on Multidisciplinary Studies and Innovative Technologies (ISMSIT), pp. 1-7, Nov. 2024, doi: 10.1109/ismsit63511.2024.10757214.
- [8] N. Saleem, S. Mathrani, and A. Sajjad, "Exploring the evolutionary characteristics of project management approaches at different levels of operations," in 2021 IEEE Asia-Pacific Conference on Computer Science and Data Engineering (CSDE), 2021, pp. 1-7, [Online]. Available: <https://doi.org/10.1109/CSDE53843.2021.971847>.
- [9] T. Åsgård, "Learning project management: The case of further education in Norway," *Procedia Computer Science*, vol. 196, 2022, pp. 848-855, [Online]. Available: <https://doi.org/10.1016/j.procs.2021.12.084>.
- [10] V. S. Anantatmula and P. F. Rad, "Role of organizational project management maturity factors on project success," *Engineering Management Journal*, vol. 30, no. 3, 2018, pp. 165-178, [Online]. Available: <https://doi.org/10.1080/10429247.2018.1458208>.
- [11] M. Radujković and M. Sjekavica, "Project management success factors," *Procedia Engineering*, vol. 196, 2017, pp. 607-615, [Online]. Available: <https://doi.org/10.1016/j.proeng.2017.08.048>.
- [12] M. L. Todorović, D. Č. Petrović, M. M. Mihić, V. L. Obradović, and S. D. Bushuyev, "Project success analysis framework: A knowledge-based approach in project management," *International Journal of Project Management*, vol. 33, no. 4, 2015, pp. 772-783, [Online]. Available: <https://doi.org/10.1016/j.ijproman.2014.10.009>.
- [13] P. W. Ihuah, I. I. Kakulu, and D. Eaton, "A review of critical project management success factors (CPMSF) for sustainable social housing in Nigeria," *International Journal of Sustainable Built Environment*, vol. 3, no. 1, 2014, pp. 62-71, [Online]. Available: <https://doi.org/10.1016/j.ijbsbe.2014.08.001>.
- [14] R. Helmy, N. Khourshed, M. Wahba, and A. A. El Bary, "Exploring critical success factors for public-private partnership: Case study: The educational sector in Egypt," *Journal of Open Innovation: Technology, Market, and Complexity*, vol. 6, no. 4, 2020, pp. 1-27.