

Impact of the Critical Success Factors on International Development Projects in Mukalla, Yemen

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ABSTRACT

The finance of International Development Projects in Yemen using Social Fund for Development (SFD), is bedeviled by a number of impediments. This study identified and measured the critical success factors in International Development Projects. The approach is quantitative; data was collected using 338 structured, closed-ended questionnaires. Relative Importance Index (RII) and PLS- SEM was used in the analysis. The findings revealed that: Project Planning and Execution, Construction Organizational Factors, Client and Stakeholder Engagement and Environmental Factors were identified as the most critical success factors. The Environmental Factors with ($\beta = 0.410$, $t = 6.013$, $p < 0.05$) accounted for the highest variation, while Project Planning and Execution with ($\beta = 0.184$, $t = 3.664$, $p < 0.05$) has the second highest prediction on the success of development projects in Yemen. The four exogenous variables predicted about 52% of the variation in the success in International Development Projects. It was recommended that environmental issues like political, economic, social, project location and size; and then project planning and execution issues like plan formulation, risk assessment and mitigation, monitoring, and commitment to meet quality, cost and time objectives deserve special attention.

Keywords: Environmental factors, Project Planning and Execution, Success factors, Yemen.

INTRODUCTION

The construction industry in Yemen is facing significant economic and technological challenges, and the country's political instability and civil conflict have directly impacted the national economy and socio-economic growth [1-3], also weak institutional and administrative structures as well as prevalence of corruption have tremendous negative effects on the construction industries in Yemen. The lack of essential infrastructure for industrial and human consumptions tends to hinder the entire success in project development. The program Cash for Work (CFW) supervised by Social Fund for Development (SFD) alongside international donors

was focused on creating jobs to people and ameliorate some of the socio-economic problems [4]. Established in 1997, SFD is a World Bank assisted-program for promote human development through improved access to social and economic services such as education, health, and infrastructure [5], despite the volatile peace and tranquility.

SFD consists of three components, namely, - 1. community development, which is designed to upgrade basic infrastructure while providing temporary employment; 2. small and micro-enterprise development, which delivers technical assistance, training, and improved access to credit facilities; and 3. capacity building, which involves helping local NGOs, community groups, and contractors to identify and implement sub-projects [6]. The construction sector has experienced some kind of setback, which is aggravated by international and local crises thereby bedeviled international development projects, causing negative effects on community projects and the lives of beneficiaries. Among other issues, cost overrun and delay in completion are some of the major problems in international project delivery across the world [7, 8] in which Mukalla, Yemen is not an exception; and political instability caused by civil conflict exacerbates the problems in socio-economic development.

The construction industry over the past 3 years have contributed about 15% increase in GDP, exhibiting resilience and playing vital role in the country's economic development [9, 10]. The industry has made some achievements like Al-Mansour Tower, a modern commercial complex in Sana'a, road and bridge constructions are very essential however, some impediments affect further progress. This study is aimed at identifying the critical success factors of international development projects (IDPs), using the Social Fund for Development (SFD); and measured the effects on international projects delivery in Mukalla, Yemen.

LITERATURE REVIEW

The International Development Projects (IDP) is an initiative that focused on human development through projects execution by raising fund from international donors; in a nutshell, IDP is a donor-funded public sector initiative meant to address economic and social needs in developing countries [11, 12]. The scheme has in its goal, the ultimate concern to eliminating poverty or promoting social transformation [13-16].

Project Success

Project success is measured by considering cost, time, and quality [9], the three are known as "iron triangle" or "triple constraints" [17, 18]. Many experts believe that while the "iron triangle" criteria is important, but is insufficient to measure project success comprehensively, because the criteria may have some limitations in the evaluation of project success [14, 19-22]. Beyond the iron triangle, success should also be measured by reflecting on the stakeholder satisfaction, meeting business objectives and strategic goals, developing new markets and technology, and creating social and environmental impacts. This broader perspective includes the judgments of multiple stakeholders, such as project managers, project teams, owners, clients, users, sponsors, and senior management, have important role to play in evaluating the success of project outcomes over time [17, 23-27].

Social Fund for Development

The Social Fund for Development (SFD) in Yemen was established in 1997 under Law No. 10 as a semi-autonomous government institution with technical and financial support from the

World Bank. It became the lead institution advocating for raising financial resources from various donors. The SFD was created as part of the government's efforts to establish social safety nets in response to its economic structural adjustment programs. Since its establishment, approximately US\$1.98 billion in donor and government financing was raised to fund SFD projects, with total disbursements amounting to US\$1.2 billion. The World Bank was the primary funding source during the first and second phases, contributing around 30% of SFD's funding [5, 28].

The government of Yemen became the primary funding source in the third phase, contributing 19% of the overall budget. The SFD is also funded by a wide range of donors, including the Yemeni government, World Bank/IDA, European Union (EU), United Nations Development Program (UNDP), United Kingdom (DFID), German Development Bank (KfW), The Netherlands, the Arab Fund for Economic and Social Development, the Islamic Development Bank, the United States Agency for International Development (USAID), and the Prince Claus Trust Fund [5].

SFD Projects in Mukalla, Yemen (2015-2020)

In Yemen, the political crisis that began in 2011 led to the failure of many construction projects. The SFD construction project was also affected because the government did not support it and focused on meeting essential needs and paying salaries [4]. The SFD-Mukalla branch completed its projects successfully, while many other construction projects failed. Table I shows that 66 projects under the SFD-Mukalla branch were completed successfully from 2015 to 2020 (18 in Hadramout, 37 in Shabwah, 9 in Al Mahrah, and 2 in Sokatra).

Table 1: SFD-Mukalla Construction in the Period (2015-2020)

Projects	Hadramout	Shabwah	AlMahrah	Sokatra	Total number of projects
Health	1	6	-	-	7
Education	4	-	2	-	6
Water & Environment	10	17	7	1	35
Agriculture	1	12	-	-	13
Roads	2	2	-	1	5
Total	18	37	9	2	66

Capacity for International Development Project (IDP)

The 2024 International Development Corporation Reported that the global investment in international development projects has witnessed an increasing trajectory from less than US\$50 million to over 250 million in 2023 humanitarian aid and bilateral development projects. For instance, in 2022, donations of funds to support crisis-prone areas increased by 17%, reaching an all-time high of US\$211 billion. These cross-border contributions have positioned IDP as a backbone of international development and collaboration, bringing together resources, expertise, and investment to drive the construction of several infrastructural projects across the globe.

The post-1994 genocide reconstruction of Rwanda about three decades, was made possible through IDP, where schools, healthcare, and transportation networks were constructed by donations from international partners [29]. IDP in collaboration with the Afghan Infrastructure Program, supported Afghanistan's 2001 post-conflict reconstruction of schools, healthcare, roads, power plants, etc., thereby boosting the economy and reconnecting Afghanistan to the

world [30]. After South Sudan's independence in 2011, international donors like the World Bank and various NGOs contributed to rebuilding roads and provision of water supplies [31].

In Palestine, the reconstruction of Gaza is supported by international organizations and donors, focused on rebuilding homes, schools, hospitals, and power infrastructure [32]. International development projects were implemented to rebuild roads, schools, healthcare facilities, and water systems after the catastrophic 2010 earthquake in Haiti. The Yemen's Social Fund for Development (SFD) has been actively involved in infrastructural development and restoration of basic services in conflict-affected areas [33].

Challenges in IDP

Significant achievements were made, however, a number of impediments especially in war-torn, devastated, and low-income nations, have constituted great challenges. The entire IDPs process becomes complex due to inherent issues. Almeile, Maxwell [34] stated that one of the pressing issues in delivering international development projects, especially construction projects, is the extremely complex social, economic, and political factors that affect the delivery of goods and services.

Williams and Gordon-Gibson [35] cited the issue of multiple stakeholders' involvement, such as international organizations and agencies, government and local government entities, diverse expertise across the globe, and local communities, each with their own set of interests and priorities. Thus, managing diverse stakeholders poses serious issues due to cultural differences, lack of robust project management strategies, and inadequate communication, eventually leading to project failure. Security risks remain a pressing challenge, exposing workers to danger due to violence and insurgency. This constantly disrupts construction activities, increasing costs and possible abandonment of projects [36, 37] [36, 37]. Santos, Barriga [38] hammered on the issues of logistics due to restricted zones and destroyed road networks, and inadequate funding and resource availability, resulting in project delays.

The aforementioned issues raised a major concern among stakeholders, resulting in the investigation of critical success factors that can drive project development to successful completion. Bajpai and Misra [39] defined success factors as the fundamental elements that ensure that construction projects meet the set objectives within the constraints of time, cost, and quality, driving the successful completion of construction projects. According to Bajpai and Misra [39], Ali, Ahmed [40], that among the success factors that drive construction projects include risk management, and the ability to adapt to changing conditions, effective project planning, and stakeholder engagement. Thneibat and Al-Shattarat [41] cited that construction project success factors are critical for determining the likelihood of a project's success, depending on varying conditions like environment, topography, country level of development, and political status of the nation.

In conflict nations where conditions are volatile, effective planning remains the pivotal success factor, encompassing setting clear timelines, effective allocation of limited resources, and adaptability in a changing environment [39]. Effective leadership is pivotal in bridging the gap between diverse stakeholders, including governments, contractors, and local communities. Effective leadership and construction organization management ensure swift decision-making, especially in environments with rapidly changing security and logistical challenges [41]. The

ability to manage risk in conflict zones cannot be under-emphasized. These risks are amplified by political instability, security threats, and supply chain disruptions. Therefore, effective security measures, alternative supply routes, proactive measures, and flexibility are necessary to drive the construction success of international projects [40]. After the year 2011, the construction sector - including the private and public sectors - experienced eventual collapse and faced critical challenges. The complicated economic and technical problems of low productivity, management difficulties, delays, and high costs have a direct impact on the success of the Yemeni construction industry and have led to the widespread phenomena of project delays in Yemen [4, 42]. With Yemen's critical need for infrastructure development amidst ongoing instability, understanding the key drivers of project success is paramount for ensuring the efficient allocation of resources, timely completion of projects, and long-term sustainability.

The critical success factors are numerous and they vary from one country to another. Four (4) relevant factors were identified as follows; Project Planning and Execution [43-45]. Construction Organizational Factors [46-49]. Client and Stakeholder Engagement [50-54], Environmental Factors [55-59].

This research, therefore, explored the critical success factors of international construction projects in Yemen, providing valuable insights into overcoming the unique challenges posed by conflict-affected environments. The study provides a blueprint and effective pathway for the successful delivery of construction projects in conflict zones, offering practitioners effective strategies for mitigating risks, managing resource shortage and instability, and enhancing projects' success and resilience.

METHODOLOGY

The main and sub-variables of this study were established from in-depth literature reviews, and were used to develop the instrument for field data collection. Table 2 presents the main and sub variables.

Table 2: Main variables and the Sub variables

SN	Main Variables	Sub Variables	Authors
1.	Project Planning and Execution (Exogenous Variable)	<ol style="list-style-type: none"> 1. Goal clarity 2. Project plan formulation 3. Design Team Expertise and Contribution to Construction 4. Clear and adequate documentation 5. Performance monitoring and implementation 6. Commitment to quality, cost, and time objectives 7. Project manager's expertise and competencies 8. Skilled workforce management and resource allocation 9. Risk assessment and Risk mitigation strategies. 10. Project communication and information technology 	[43-45, 53]
2.	Construction Organizational Factors (Exogenous Variable)	<ol style="list-style-type: none"> 1. Strong mutual confidence among project participants 2. Empowerment 3. Managerial leadership and expertise 4. Project team flexibility 5. Conflict handling 6. Project manager authority 	[20, 46-48, 57, 60]

		7. Organizational structure 8. Change management 9. Top management support 10. Project management office	
3.	Client and Stakeholder Engagement (Exogenous Variable)	1. Client engagement and interaction aspects 2. Capability of the client and key personnel 3. Supplier motivation strategies 4. Client Feedback Mechanisms 5. Client's Role in Decision-Making.	[50-54, 61]
4.	Environmental Factors (Exogenous Variable)	1. Economic environment 2. Social environment 3. Political environment 4. Statutory approvals environment 5. Project's Location 6. Project's Size 7. Clear and realistic goals/objectives 8. Project's adequate funds/resources 9. Effective procurement and tendering methods	[55-62]
5.	IDP Success (Endogenous Variable).	1. Efficiency in Construction Project Execution. 2. Impact on the Client. 3. Impact on the Construction Team. 4. Business aspect of Construction Project. 5. Preparedness for future Construction Projects	[63-66]

The questionnaire was designed as closed-ended in Likert pattern with scale 1 to 5 denoting "Not Significant", "Slightly Significant", "Modately Significant", "Very Significant" and "Extremely Significant" respectively. Each major variable constituted an integral section in the questionnaire. Thus, the approach of the study was quantitative and 338 instrument of data collection was retrieved for analysis from a composition of Engineers 172, Contractors 66 and Agents of Sponsoring Authority 132 at SFD-Mukalla Branch in Yemen to understand their perception regarding the level of significance of the success factors of construction projects. Purposive Sampling was adjudged to be the most appropriate technique for selecting the respondents.

Reliability analysis was carried out to check the internal consistency of the sub variables/themes. Table 3 presents the reliability analysis. The most relevant factors were sieved using Relative Importance Index (RII) and Partial Least Square-SEM analyzed the relationship.

RELIABILITY ANALYSIS

The internal consistency of the items of measurement under each main variable was determined using Cronbach's Alpha in SPSS (Table 3); any Alpha value greater than 0.70 is acceptable [34], [33]. The five main variables have achieved the required level of internal consistency of items under them, which denotes that the scales hold enough degree of reliability and consistency to be used for further analysis.

Table 3: Reliability Analysis of most relevant factors (major variables), using Cronbach's Alpha.

S/N	Variables	Cronbach's Alpha	Number of Items
1.	Project Planning and Execution	0.830	29
2.	Construction Organizational Factors	0.870	12
3.	Client and Stakeholder Engagement	0.750	3
4.	Environmental Factors	0.850	9
5.	IDP Success	0.920	5

THE SUCCESS FACTORS RELEVANCY ANALYSIS

The relevance of the success factors of construction projects are determined in this study for the Yemen construction industry using Relative Importance Index (RII). The RII calculated for each factor was evaluated for its significance using the range adopted from [6] as follows (Table 4):

Table 4: Range for the Evaluation of Relative Importance Index (RII) Adopted from Akadiri, 2011.

SN	Range	Remark
1.	$0 \leq RII \leq 0.2$	Not Significant
2.	$0.2 \leq RII \leq 0.4$	Slightly Significant
3.	$0.4 \leq RII \leq 0.6$	Moderately Significant
4.	$0.6 \leq RII \leq 0.8$	Very Significant
5.	$0.8 \leq RII \leq 1$	Extremely Significant

It can be perceived that the RII value of 53 sub-variables (items of measurements) considered in this study, 32 fall within the range of "Extremely Significant" ($0.8 \leq RII \leq 1$) and 21 were in the range of "Very Significant" ($0.6 \leq RII \leq 0.8$). Hence, 32 extremely significant and 21 very significant sub-variables were subjected for further analysis using Partial Least Square-SEM. However, Table 5 presented the RII of the main variables (critical success factors).

Table 5: Relative Importance Index (RII) of the Critical Success Factors and most relevant Sub-variables.

S/N	Variables	RII
1.	Project Planning and Execution	0.824
	i. Project plan formulation	0.841
	ii. Goal clarity	0.837
	iii. Project manager's adaptability	0.833
2.	Construction Organizational Factors	0.825
	i. Collaborative teamwork and collective expertise	0.835
	ii. Strong mutual confidence among project participants	0.834
	iii. Project managers' competency, authority and involvement	0.833
3.	Client and Stakeholder Engagement	0.835
	i. Client engagement and interaction aspects	0.836
	ii. Suppliers motivation strategies	0.836
	iii. Capability of the client and key personnel (RII =	0.834
4.	Environmental Factors	0.834

i. Effective procurement and tendering method	0.840),
ii. Clear and realistic objectives	0.838
iii. Adequate project funds/resources	0.836)
iv. social environment	0.836)

ANALYSIS OF THE STRUCTURAL MODEL

The structural model was evaluated using Partial Least Square-Structural Equation Model (PLS-SEM). The stage involves evaluating the path coefficients and their significance, r-square value, effect size and collinearity assessment [67-69]. The structural model in Figure 1 indicated t-values of the path coefficients.

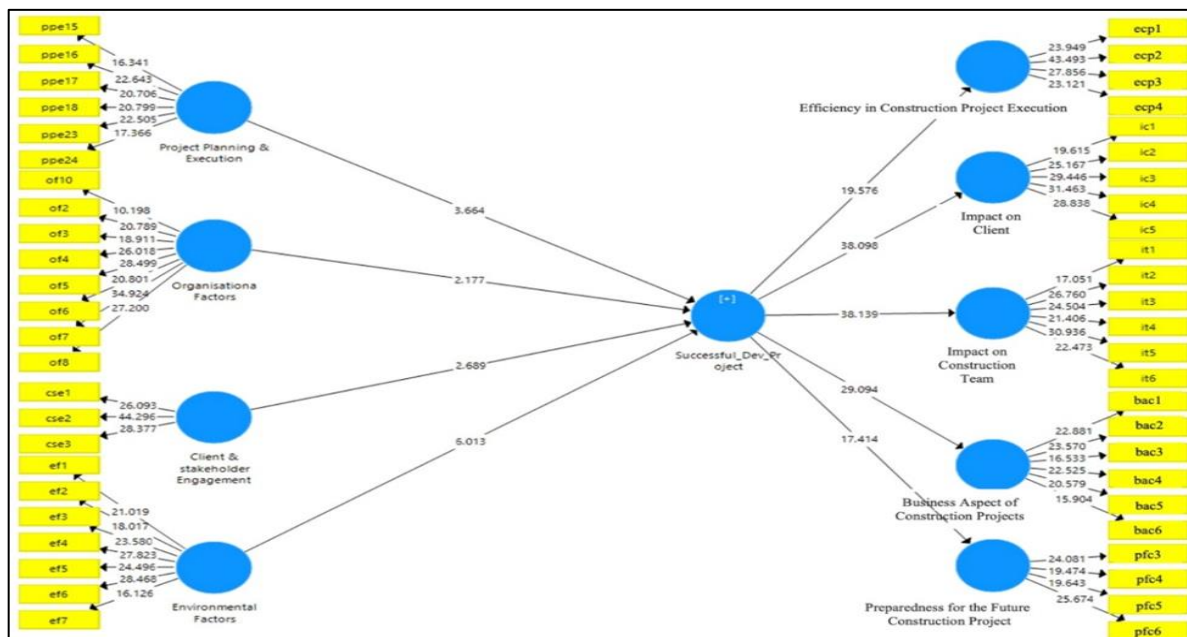


Fig. 1: Structural Model

Assessing the magnitude and significance of the path coefficients is the first step of the structural model evaluation. The path coefficient is the estimate of the hypothesized relationship between the independent variables (exogenous variables) and the dependent variables (endogenous variable) in a research model. In other words, it shows the directionality and strength of the relationship between the variables in a research model. It is measured by beta value which range between ± 1 where a value close to +1 shows strong positive relationship and a value close to -1 indicates strong negative relationship [70, 71]. The path coefficient also measures the relative effect of each path in a research model.

The R-Square (R^2) is the overall metric that shows how well a given structural model performs. It specifically measures the cumulative effect of all the exogenous variables in the model in explaining the change or variation in the endogenous variable [22, 72, 73]. Where the R^2 values of 0.25 denotes weak effect; 0.50 denotes moderate effect, and .75 is interpreted as substantial effect [2, 14, 74]. Table 6 indicated a cumulative R^2 of 0.522 (52%) which implies that the four (4) critical success factors: Project Planning and Execution, Organizational Factors, Clients and Stakeholder Engagement and Environmental Factors cumulatively explained about 52% variation in the Success of International Development Projects Mukalla, Yemen.

Table 6: R-Square Value

SN	Endogenous Variable	R ²	R ² Adjusted
1	Successful International Development Project in Mukalla-Yemen	0.522	0.516

As such, the remaining 48% may be explained by other factors not considered in this study. The individual effect of each factor is further presented under F-Square in Table 7. Here the effect sizes of the independent (exogenous) variables on the R² are stated.

The “effect size” measures the impact a specific variable on the R². It was assessed using Cohen’s criterion of statistics in behavioural science, it explained that F-Square value of 0.02 is considered small; 0.15 is medium and 0.35 is considered large.

Table 7: F- Square Values

SN	Exogenous Variables (Independent Variables)	F-Square
1.	Project Planning and Execution,	0.049
2.	Construction Organizational Factors	0.018
3.	Clients and Stakeholder Engagement	0.035
4.	Environmental Factors	0.15

The effect sizes of the exogenous variables on the R² shows that Environmental Factors have medium effect on the Success of International Development Project while Clients and Stakeholder Engagement, Construction Organizational Factors and Project Planning and Execution are reported to have small effect size on the Success of International Development Project (Table 7). However, environmental factors with ($\beta = 0.410$, $t = 6.013$, $p < 0.05$) reported the highest Beta Coefficient, which implies that “environmental factors” is the strongest critical success factor that contributes toward successful international construction development projects in Mukalla, Yemen. This is followed by “project planning and execution” with ($\beta = 0.184$, $t = 3.664$, $p < 0.05$); then followed by “clients and stakeholder engagement” with ($\beta = 0.172$, $t = 2.689$, $p < 0.05$) and the last critical factor is the “construction organizational factors” with ($\beta = 0.114$, $t = 2.1779$, $p < 0.05$).

It is therefore very essential to consider all the items of measurements under “environmental factors” namely, - economic environment, social environment, political environment, project location and project size; any improvement in these aspects can have a tremendous positive effect on the success of IDP in Yemen. Likewise, the most relevant items as determined by RII under project planning and execution factor deserved special attention in order to boost success of IDP in Yemen, these items are - goal clarity, project plan formulation, avoidance of multitasking, risk assessment, risk mitigation strategies, baseline management, effective project monitoring, project communication, commitment to meet quality, cost, and time objectives etc.

DISCUSSION, THEORETICAL AND PRACTICAL IMPLICATIONS

This study identified 32 critical success factors (CSFs) that play a significant role in determining the success of international development projects in Mukalla, Yemen. Using the Relative Importance Index (RII) and Partial Least Squares Structural Equation Modeling (PLS-SEM), the findings revealed that environmental factors exerted the strongest influence on project success, followed by project planning and execution, client and stakeholder engagement, and

organizational factors. These constructs all demonstrated significant contributions to project outcomes, which were evaluated through a multidimensional lens including project efficiency, business success, client satisfaction, team performance, and readiness for future projects. The results are consistent with earlier studies that have highlighted the decisive role of external conditions in project success. For instance, Ofori (2015) and Ling & Hoi (2006) emphasized how donor requirements, government regulations, and local infrastructure can directly affect project implementation. Similarly, Turner and Müller (2005) emphasized the importance of detailed planning and stakeholder involvement, both of which were reinforced by the current findings. Zuo et al. (2018) also noted the contribution of organizational capabilities, which, although the weakest among the four constructs in this study, still proved to be statistically significant. A deeper interpretation of these results suggests that the high impact of environmental factors may stem from the unstable conditions of a post-conflict setting like Mukalla, where economic volatility, political uncertainty, and external donor pressures create a highly dynamic project environment. The essential role of planning and execution indicates that clarity in goals, scheduling, and procurement is critical for navigating such uncertainty. Meanwhile, the continued but lesser influence of organizational factors might be attributed to limited institutional capacity or leadership constraints, which remain a challenge in many developing or fragile contexts.

The findings contribute to theory by extending the understanding of project success frameworks, especially within the domain of international development projects operating in fragile environments. They emphasize the need to account for context-specific variables when evaluating project performance. From a practical standpoint, the results suggest that development actors-particularly project managers, local governments, and international donors-should focus on enhancing adaptive planning processes, investing in local capacity-building, and ensuring alignment between donor priorities and local needs. Fostering inclusive stakeholder engagement and proactively managing environmental risks can significantly improve the chances of project success in similar contexts.

LIMITATIONS AND FUTURE RESEARCH

This study is subject to certain limitations that should be acknowledged. It focused exclusively on projects within a single city, Mukalla, and employed a cross-sectional research design, which may restrict the generalizability of the findings to other contexts or timeframes. Additionally, the data was gathered primarily from contractors and consultants, which may not fully reflect the perspectives of clients or end beneficiaries involved in these development initiatives. To build on these findings, future research should consider longitudinal approaches to examine how critical success factors influence project outcomes over time. Comparative studies across different cities or countries could also provide a broader understanding of regional variations. Furthermore, integrating qualitative insights from beneficiaries, donors, and community stakeholders would offer a more holistic view of success dynamics in international development projects.

CONCLUSION

Based on the empirical analysis, environmental factors which comprised of political, social, economic as well as project location is the most critical factor that influence the success of international development projects in Mukalla, Yemen. In the same direction, the project planning and execution which entails Project formulation, effective project monitoring paying

absolute attention to quality, cost, and time objectives are necessary for successful projects construction in Mukalla, Yemen.

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