Exploring the Key Factors Influencing Design and Build Construction Success in Tripoli, Libya

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Abstract

The reconstruction of Libya after the civil war has placed greater importance on the construction industry, but research has not provided specific information about the context that might influence the success of a construction project using Design and Build (D&B) methods. This study aims to address this research gap by exploring the key factors affecting the time required to complete D&B construction projects in Tripoli, Libya. It examines the influence of four independent variables on project performance: (1) procurement systems, (2) currency costing, (3) logistics delivery, and (4) causes of delays. A structured questionnaire was developed for a quantitative approach, yielding 396 valid responses from members of the construction community. The researchers employed multiple linear regression and t-tests to determine which variable relationships were significant. The study showed that procurement systems (β=0.165, p=0.001), currency costing (β=0.249, p=0.000), and logistics delivery (β=0.143, p=0.003) all produced significant positive effects on project completion times. The general causes of delay showed no statistically significant effect (β = -0.030, p = 0.525). The research

results demonstrate that operational and financial management processes have a stronger effect on project completion than the traditional causes of delay identified by researchers in post-conflict construction environments. The research will increase knowledge about Critical Success Factors (CSFs) which particularly apply to fragile and transitional economies through its identification of logistics delivery as an essential strategic factor that exists in under-explored research areas. The study will provide value by delivering evidence-based recommendations that benefit both policymakers and construction industry stakeholders. The evidence-based recommendations indicate that organizations should implement e-procurement systems and develop better methods for currency risk management and supply chain coordination. The developments will enable projects to become more durable which will lead to faster completion of infrastructure projects while supporting the eco-friendly reconstruction of Libya along with other nations recovering from conflict.

Keywords: Critical Success Factors, construction project, construction industry, Design and Build Libyan construction sector.

المستخلص:

أدى إعادة إعمار ليبيا بعد الحرب الأهلية إلى إيلاء أهمية بالغة لقطاع الإنشاءات، إلا أن الأبحاث لم تقدم معلومات محددة حول السياق الذي قد يؤثر على نجاح مشاريع الإنشاءات التي تستخدم أساليب التصميم والبناء. تهدف هذه الدراسة إلى سد هذه الفجوة البحثية من خلال استكشاف العوامل الرئيسية المؤثرة على الوقت اللازم لإنجاز مشاريع الإنشاءات التي تستخدم أساليب التصميم والبناء في طرابلس، ليبيا. وتدرس الدراسة تأثير أربعة متغيرات مستقلة على أداء المشروع: (1) أنظمة التوريد، (2) تكلفة العملة، (3) الخدمات اللوجستية، و(4) أسباب التأخير. تم تطوير استبيان منظم لمنهجية كمية، أسفرت عن 396 استجابة صالحة من أعضاء مجتمع الإنشاءات. استخدم الباحثون تحليل الانحدار الخطي المتعدد واختبارات t لتحديد العلاقات بين

المتغيرات ذات الدلالة الإحصائية. أظهرت الدراسة أن أنظمة الشراء (β=0.165، p=0.001)، وتكاليف العملات (β=0.249، p=0.000)، وخدمات التوصيل اللوجستي (β=0.143، p=0.003) جميعها كان لها تأثير إيجابي كبير على أوقات إنجاز المشاريع. في المقابل، لم تُظهر الأسباب العامة للتأخير أي تأثير ذي دلالة إحصائية (β = -0.030، p = 0.525). تُبين نتائج البحث أن عمليات الإدارة التشغيلية والمالية لها تأثير أقوى على إنجاز المشاريع من الأسباب التقليدية للتأخير التي حددها الباحثون في بيئات البناء ما بعد النزاعات. سيسهم هذا البحث في تعزيز المعرفة حول عوامل النجاح الحاسمة، التي تنطبق بشكل خاص على الاقتصادات الهشة والانتقالية، من خلال تحديد خدمات التوصيل اللوجستي كعامل استراتيجي أساسي موجود في مجالات بحثية لم تحظَ بالدراسة الكافية. ستُقدم الدراسة قيمة مضافة من خلال تقديم توصيات قائمة على الأدلة تُفيد صانعي السياسات وأصحاب المصلحة في قطاع البناء. تُشير هذه التوصيات إلى ضرورة قيام المؤسسات بتطبيق أنظمة الشراء الإلكتروني وتطوير أساليب أفضل لإدارة مخاطر العملات وتنسيق سلسلة التوريد. ستُمكّن هذه التطورات المشاريع من أن تصبح أكثر استدامة، مما سيؤدي إلى إنجاز أسرع لمشاريع البنية التحتية، مع دعم إعادة الإعمار الصديقة للبيئة في ليبيا إلى جانب الدول الأخرى التي تتعافى من الصراع.

الكلمات المفتاحية: عوامل النجاح الحاسمة، مشروع بناء، صناعة البناء، التصميم والبناء، قطاع البناء الليبي.

1. Introduction

The construction sector is a key driver of economic growth, contributing significantly to employment generation and infrastructure development (Wibowo & Permana, 2015).Global trends indicate steady expansion, particularly in Asia, driven by rising demand for healthcare, education, and consumer infrastructure (Dodman et al, 2023).

In Libya, and notably in Tripoli, rapid urbanization and population growth have intensified the demand for construction projects. The industry has grown substantially, with investment rising from USD 22 billion in 2012 to USD 54 billion in 2021 (Alaloul et al., 2021). This expansion has been accompanied by increased

reliance on the Design and Build (D&B) procurement method, which integrates design and construction under a single contract. The D&B model offers potential benefits, including reduced timelines, cost efficiency, and streamlined project management.

However, academic research on the adoption of D&B in Libya remains underexplored. Existing studies have identified labor shortages, coordination issues, and contract disputes. This study examines the critical success factors that influence the performance of D&B construction projects in Tripoli, addressing a gap in the literature and offering practical insights to improve project outcomes in the Libyan context.

2. Conceptual Framework

This study proposes a new conceptual framework based on the Critical Success Factor (CSF) literature and project management theory to explain how four independent variables affect the successful completion of Design and Build (D&B) construction projects in Tripoli, Libya, by impacting the time required for completion: procurement systems, currency costing, logistics delivery and the causes of delay.

Procurement systems describe the planning and implementation of processes used to source credible accountability for construction materials or services from reliable suppliers/contractors, require special attention to the approval of each system to ensure efficient procurement from an overarching system perspective. Currency costing denotes how to prudently manage cost-related issues due to foreign exchange rates or other factors in unstable economies/countries. Logistics delivery includes management of coordination/consolidation across various Supply Chain activities to ensure timely provision of construction related resources. Lastly, the reasons cited as causes of delay will provide some common factors that affect successful completion of projects within the construction industry literature.

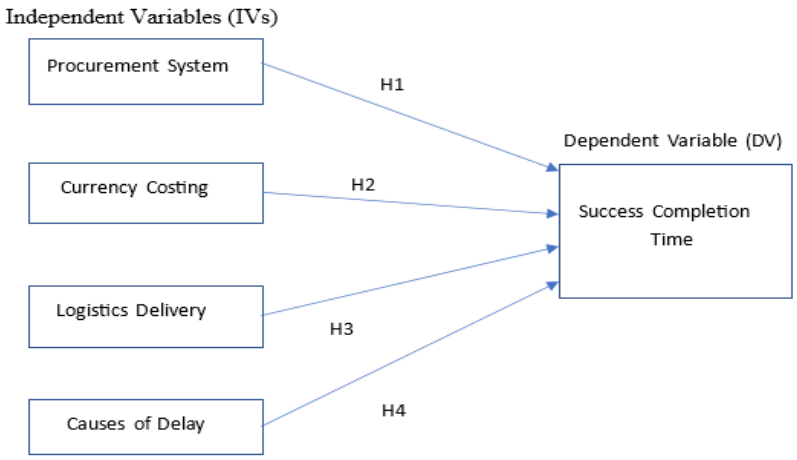

Figure 2.1
Research Framework
Source: Developed by researcher for research purpose

It is suggested that these variables can influence the time taken to complete a project - this is considered as the main measure of project success in Design and Build procurement systems. The conceptual framework demonstrates how the research question identified in the context of Libya has been defined in terms of measurable constructs and testable hypotheses, thereby aligning theory, methodology, and empirical data analysis.

Further, the framework contributes to a better understanding of the potential impact of context-specific project management strategies on project performance in post-conflict reconstruction, as project construction in these environments can be significantly affected by economic instability, logistical challenges, and institutional transitions.

1. Related literature

The construction industry is a fundamental pillar of any nation's economy, providing the necessary infrastructure for various

economic activities and societal development (Mamlook et al., 2020). The sector's strong interdependencies with other economic sectors highlight its critical role in driving overall economic growth and reflecting a nation's prosperity (Seeboo & Proag, 2019). However, construction projects are frequently exposed to risks, especially those related to unforeseen physical obstructions or changing site conditions, which can dramatically affect project outcomes (Amarasekara et al., 2018). Understanding and effectively managing these risks is paramount to ensuring successful project completion, especially in regions with unique challenges such as Tripoli, Libya (Rafindadi et al., 2020). In addition, infrastructure projects are regarded as crucial interests for countries because of their impact on the economy and all aspects of life; therefore, technologies have been developed to control projects in terms of cost, time, and quality (Al-Fadhli, 2020). Also, construction projects are complex endeavors involving multiple stages, stakeholders, and inherent uncertainties, making them susceptible to myriad challenges that can lead to delays, cost overruns, and compromised quality.

Exploring the factors that influence the success of design-and-build construction projects in Tripoli, Libya, requires an understanding of the region's unique context. The success of construction projects in Tripoli hinges on a complex interplay of factors, ranging from effective project management practices and regulatory compliance to risk mitigation strategies and technological adoption. Libya's construction sector has faced significant disruptions due to political instability and security concerns. These disruptions have led to material shortages, workforce challenges, and overall project delays (Santoso & Gallage, 2019). The complexities associated with integrating sustainability in the construction sector in Libya, to rank the

challenges that might be faced by its construction stakeholders, are a serious concern (Khalil et al., 2021). Furthermore, projects often fail on several fronts when implemented using traditional methods, leading to significant resource waste (Al-Fadhli, 2020). Project success is typically defined by adherence to time and budget constraints while meeting specified quality standards (Rauzana et al., 2022). However, in practice, construction projects frequently face challenges that impede their expected performance, often constrained by time, cost, quality, and competition (Nketekete et al., 2017). Also, the lack of competition and delays in progress payments can significantly impede project progress (Bajpai et al., 2016). Construction project delays are a widespread and critical issue, leading to dissatisfaction among all stakeholders and hindering economic development (Dusso & Bayeh, 2020).

2. Method

2.1Study community

Overall, 967 participants were targeted for this research. Participant details were obtained from known construction firms in Tripoli, where knowledge of the samples helps determine the size of this research. The study comprised 967 potential participants, as discussed earlier, of whom 396 were respondents.

3.2 Questionnaire Design

Data for this research were collected using a questionnaire. The questionnaire was designed to increase the response rate (Yu & Cooper,1983). It was sent directly to the key informant in each sample firm. The questionnaire was printed on white paper to showcase professionalism and reduce bulkiness and density on both sides. Answering the questions was easy for the participants, as they were asked to simply tick a number on a scale.

The questionnaire was designed with six sections. Section A comprised the respondents' profile, consisting of 10 demographic questions designed on an ordinal scale. Sections B to F comprised Likert scale questions, with Strongly Disagree (1) through Strongly Agree (5) measures. Section B probed the procurement system issues related to design-and-build construction projects, with five (5) sub-scales and a total of 22 questions.

Section C addressed the issue of currency costs in design-and-build construction projects, comprising three (3) sub-scales and a total of 19 questions. Section D probed the logistics of delivering design-and-build construction projects, comprising 20 questions across five (5) sub-scales.

Section E had 23 questions pertaining to the success and completion time of design-and-build construction projects, with three (3) sub-scales. Section F probed the causes of delay in design-and-build construction projects, with 14 questions in one (1) sub-scale.

Questions in Sections B, C, D and F reflect the independent variables (IVs), while Section E informs on the dependent variable (DV).

3.3 Reliability and Validity of the Instrument

To ensure the research instrument is clear, relevant, and unbiased before distribution, an initial quality assessment was conducted with a group of subject-matter experts. This included both members of academia who are experts in construction and Project Management, as well as industry practitioners experienced with Design & Build (D&B) projects. The experts were given an opportunity to assess the questionnaire with respect to its wording (clarity), relevance (content), logic (structure), and overall appropriateness/inappropriateness for use in the Libyan

construction context, specifically in a post-conflict environment (e.g., Tripoli).

Some minor edits were made based on the reviewers' feedback to clarify items, reduce vagueness, and confirm that each question adequately reflected the original intent or construct under study, including procurement systems, currency costing, logistics delivery, and reasons for delays in the delivery of their goods. Making these adjustments improved the survey's readability and comprehensibility, enabling all respondents to provide valid, meaningful responses.

Face validity was employed in this study to enhance the credibility of the measurement instrument and to complement other reliability and validity procedures, ensuring that the collected data would provide meaningful information for the study and be appropriate for subsequent statistical analyses.

3.3 Data Collection Procedures

The data was collected using the following procedure. A package containing the questionnaire, an introductory letter, and a return self-addressed envelope (addressed in Tripoli) was posted to the potential participants from 967 construction firms in Tripoli on 4th June 2018. A follow-up email was sent two weeks after the package was sent. Depending on the response level, a second follow-up reminder email was sent by the end of June 2018. By the first week of July 2018, the researcher decided to stop collecting the questionnaire. All the questionnaires were posted to the researcher’s

Given the local address in Tripoli, with a representative to handle the collection.

3. Descriptive Analysis

The Overall Frequency Distribution

	Gender	Age	Nationality	Educational Level	Company Lifetime (years)	Role in the compan	Experience (years)	Number of Employees in the company y	Average gross revenue /year (millions)	Type of projects undertaken
Valid	302	302	302	302	302	302	302	302	302 0	302
Missing	0	0	0	0	0	0	0	0		0

A descriptive analysis used frequency distributions to profile respondents' demographics in Tripoli's construction industry. Key demographic variables included gender, age, nationality, education level, company size, employee role, years of experience, company lifetime, project types, and average gross revenue.

Most respondents (67.7%) were aged 36–50, indicating a predominance of mid-career professionals likely possessing significant industry experience. This age distribution reflects a skilled and experienced workforce, particularly in managerial and leadership roles. These demographic insights are critical for understanding the context of respondents' perspectives on project performance and management practices.

Gender Distribution

As shown in Figure 4.2, most respondents were male (72.2%, n = 286), while females accounted for 27.8% (n = 110), reflecting the male-dominated nature of the construction industry in Tripoli.

This aligns with global trends where men predominantly occupy technical and managerial roles. However, the notable presence of women suggests gradual progress toward gender inclusivity, with increasing female participation in administrative, design, and project-related positions. These findings highlight the existing gender gap and a slow but positive shift toward diversity in the sector.

Table 2 ***Frequency analysis – Gender***

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	189	62.5	62.5	62.5
	Female	113	37.4	37.4	100.0
	Total	302	100.0	100.0	

Age

The majority of respondents (67.7%) were aged 36–50, indicating a workforce dominated by experienced mid-career professionals likely occupying senior or managerial roles. This cohort plays a central role in project execution and leadership within Tripoli's construction industry.

Younger professionals aged 20–35 accounted for 20.2% of the sample, representing a new generation entering the industry with potential for innovation and adaptability. However, their lower representation suggests challenges in attracting and retaining young talent.

Respondents aged 51 and above made up only 12.1%, reflecting a smaller presence of late-career professionals, possibly due to retirement trends. Their experience is valuable for strategic oversight, underscoring the need for effective knowledge transfer

and succession planning. Overall, the data reveals a workforce concentrated in mid-career stages, highlighting the importance of integrating younger professionals to ensure generational continuity in the sector.

Table 3 ***Frequency analysis – Age***

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	51 and above	36	11.9	11.9	11.9
	36-50	196	64.9	64.9	88.1
	20-35	70	23.2	23.2	100.0
	Total	302	100.0	100.0	

Table 4 ***Frequency analysis – Education level***

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	PhD	2	.5	.5	.5
	Master's	40	13.25	13.25	14.4
	Diploma	81	26.8	26.8	38.4
	Certificate	1	.3	.3	38.6
	Bachelor's	178	58.9	58.9	100.0
	Total	302	100.0	100.0	

Source: Data Collected by researcher for research purpose

Lifetime of the Company (in years)

The analysis revealed that 59.8% of respondents have worked for companies in the construction industry for over 10 years, indicating a stable and experienced sector in Tripoli. These firms likely possess strong industry knowledge, client networks, and the capacity to handle complex projects. Another 34.1% are employed by companies with 5–10 years of experience. These firms are typically in a growth phase, balancing emerging innovation with operational maturity. They may be more agile and adaptive to market changes. Only 6.1% of respondents work for new firms (<5 years). Although less experienced, these companies often bring innovation and flexibility but may face challenges related to capital, competition, and market credibility. Overall, the data reflects a construction industry in Tripoli that blends maturity with emerging growth, contributing to a resilient and evolving sector.

Table 5 ***Frequency analysis – Company life time (in years)***

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	more than 10 less than 5	237	59.8	59.8	59.8
	5-10	24	6.1	6.1	65.9
	Total	135	34.1	34.1	100.0
		396	100.0	100.0	

Source: Data Collected by researcher for research purpose

Role of the Employee in the Company

The role of the responding persons was gauged. As shown in Figure 4.7, most respondents (48 percent, n = 190) work in managerial roles. Another 31.8 per cent (n = 126) are in executive roles. Nearly 17.7 percent (n = 70) of employees are in senior managerial roles, with another 2.5 percent in non-executive roles (n = 10). A sound distribution of the respondents' roles and work experience in the industry suggests the viability of obtaining reasonable answers to the questions sought.

Table 6 ***Frequency analysis – Role in the company***

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Senior managerial	70	17.7	17.7	17.7
	Non-executive	10	2.5	2.5	20.2
	Managerial		48.0	48.0	68.2
	Executive	126	31.8	31.8	100.0
	Total	302	100.0	100.0	

Experience of the Employee in the Company (in years)

The analysis of employee tenure reveals that 48.5% of respondents have worked in their current company for over three years, indicating strong workforce stability and accumulated institutional knowledge. A further 41.9% reported 1–3 years of experience, representing a growing cohort of mid-level professionals gaining familiarity and advancing into more defined roles. Only 9.6% had less than 1 year of tenure, reflecting recent hires who are likely still in the onboarding phase.

This distribution suggests a well-balanced workforce comprising experienced staff, emerging talent, and new entrants. Such a mix

supports knowledge transfer, project continuity, and innovation. The predominance of long-tenured employees underscores organizational stability and supports consistent project execution in the Tripoli construction sector.

Table 7 ***Frequency analysis – Experience in the company***

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	more than	192	48.5	48.5	48.5
	3 less than	38	9.6	9.6	58.1
	1	166	41.9	41.9	100.0
	1-3				
	Total	302	100.0	100.0	

Employee Working in the Company

Regarding the number of employees in the company, a large proportion of the sample companies (51.3 percent, n = 203) reported having 51-100 employees. Nearly 37.6 percent (n = 149) have staff of more than 100 employees.

Table 8 ***Frequency analysis – No. of employees in the company***

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	more than	149	37.6	37.6	37.6
	100 less	44	11.1	11.1	48.7
	than 50	203	51.3	51.3	100.0
	51-100				
	Total	302	100.0	100.0	

Average Gross Revenue of the Company (in USD millions)

Figure 4.10 illustrates the distribution of annual gross revenue among the surveyed construction firms. The majority (37.4%) reported revenues between USD 8–11 million, indicating a strong presence of mid-sized, financially stable firms. Another 34.3% earned over USD 11 million, reflecting the presence of well-established companies capable of handling large-scale projects.

About 21.7% of firms reported revenues between USD 5–8 million, likely representing growing or specialized mid-tier companies. A smaller segment (6.6%) earned less than USD 5 million, representing small or emerging firms focused on niche or small-scale projects. The revenue distribution demonstrates a diverse financial landscape with a concentration of mid- to high-performing firms in Tripoli's construction sector.

Type of Projects Undertaken by the Company

In addition to the previously discussed elements, the survey also investigated the types of construction projects typically undertaken by the participating companies. The projects were categorized into the following types:

1. Office buildings
2. Factories
3. Residential condominiums
4. Residential houses
5. Hotels

The results indicate that most companies engage in a combination of project types. The largest group, accounting for 23% (n = 91) of respondents, reported involvement in office and factory construction projects, highlighting a focus on commercial and

industrial developments. A significant portion, 18.9% (n = 75), reported working on a mix of residential condominiums, houses, and hotels, suggesting a specialization in the residential and hospitality sectors, which are essential to urban and suburban development.

Another 15.2% (n = 60) of the companies focus exclusively on constructing residential condominiums and houses, reflecting strong involvement in residential housing projects, which are likely critical to meeting housing demand in the region. Additionally, 12.9% (n = 51) of respondents reported being involved in a broader range of projects, including office buildings, condominiums, houses, and hotels, indicating their capacity to handle diverse construction needs across multiple sectors.

On a more specific level, 13.9% (n = 55) of the companies reported focusing solely on factory construction, underscoring the importance of industrial development in their portfolios. This group of companies likely caters to the growing demand for manufacturing and production facilities, which are crucial for economic growth and infrastructure development.

Overall, the findings suggest that the participating companies are engaged in a variety of construction projects, with many involved in multiple sectors, reflecting the diverse and dynamic nature of the construction industry in the region.

Table 9 ***Frequency Analysis – Type of projects undertaken***

	Frequency	Percent	Valid Percent	Cumulative Percent
VResidential condominiums; a	75	18.9	18.9	18.9
	60	15.2	15.2	34.1

Residential houses; Hotels l		12.9	12.9	47.0
i Residential condominiums; d Residential houses	11	2.8	2.8	49.7
Office building;	7	1.8	1.8	51.5
Residential condominiums; Residential houses; Hotels	34	8.6	8.6	60.1
Office building; Residential condominiums; Residential houses	2	.5	.5	60.6
Office building; Hotels	2	.5	.5	61.1
Office building; Factories;	91	23.0	23.0	84.1
Residential condominiums; Residential houses; Hotels	6	1.5	1.5	85.6
Office building; Factories;	2	.5	.5	86.1
Residential condominiums; Residential houses	55	13.9	13.9	100.0
	302	**100.0**	**100.0**	

Office building; Factories; Hotels Office building; Factories Office building Hotels Factories Total				

4.1 Multiple Regression Analysis

A multiple regression analysis was conducted to evaluate and test the hypotheses outlined in this study. Before performing the regression analysis, several preliminary tests were conducted to ensure the model's appropriateness and reliability. These initial tests were essential in validating key assumptions required for the multiple regression procedure to be accurate and meaningful.

4.2 Pre-Processing of Data for Missing Values

Collecting primary data can be challenging, and it is not uncommon to encounter missing values. Missing data can significantly affect the analysis and potentially lead to incorrect interpretations of the results. In this survey, the dataset contained only a few missing values, which were carefully handled by imputing the most likely values for the corresponding attributes. This ensured the integrity of the dataset and allowed for accurate analysis while maintaining the necessary statistical assumptions.

4.3 Linearity

A correlation analysis was conducted using SPSS software to confirm the linear relationship between the independent and dependent variables, as shown in Table 4.12. The Pearson correlation coefficients indicate that the relationships between the

variables are weak to moderately positive and linear. As a result, the assumption of linearity between the independent and dependent variables is validated, ensuring that this key requirement for regression analysis is met.

Table 9 ***Correlation analysis***

		Success Completion Time_Design_Build	Procurement System_Design_Build	Currency Costing_Design_Build	Logistics_Delivery Design_Build
Pearson Correlation	Success Completion Time Design_Build	1.000	.273	.318	.176
	Procurement_System Design_Build	.273	1.000	.368	.115
	Currency Costing_Design_Build	.318	.368	1.000	.049
	Logistics_Delivery Design_Build	.176	.115	.049	1.000
Sig. (1-tailed)	Success Completion Time Design_Build	.	.000	.000	.000
	Procurement_System Design_Build	.000	.	.000	.011

	Currency Costing_Design_Build	.000	.000	.	.167
	Logistics_Delivery Design_Build	.000	.011	.167	.
N	Success Completion Time_Design_Build	302	302	302	302
		302	302	302	302
	Currency Costing_Design_Build	302	302	302	302
	Logistics_Delivery Design_Build	302	302	302	302

Source: Data Collected by the researcher for research purposes

4.4 Constant Variance

As indicated in Table 4.13, the predicted value has a standard deviation of 0.85, lower than the mean value of 4.28. This suggests that the variance in the error terms remains consistent, with minimal presence of outliers. Consequently, the assumption of homoscedasticity for multiple linear regression (MLR) is upheld.

Table 10 ***Residual Statistics***

Residuals Statistics[a]

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.04	4.57	4.28	.085	396
Residual	-.603	1.560	.000	.203	396
Std. Predicted Value	-2.818	3.510	.000	1.000	396
Std. Residual	-2.964	7.668	.000	.996	396

4.5 Model Adequacy (F-test)

The model adequacy was tested using the following hypothesis. As shown in Table 4.16, the p-value for the model is 0.000, which is less than the significant value ($\alpha = 0.05$). Therefore, the H_0 can be rejected.

H_0: $\beta 1 = \beta 2 = \beta 3 = 0$

$H_{1:}$ At least one $\beta_j \neq 0$ (j = 1, 2, 3)

Table 4.16 *ANOVA – Model adequacy*

4.6 Multiple Linear Regression

The obtained data were analysed using the most common form of linear regression analysis called the Multiple Linear Regression (MLR) analysis. This technique will be useful in explaining the relationship between the independent and dependent variables that were identified. The independent variable x is associated with the dependent variable y. As per the definition, the model equation can be defined as follows:

General Model Equation $y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \beta_4 x_4 + \varepsilon$

Where, x = Independent variable y = Dependent variable β = Coefficient α = Intercept/Constant ε = Error

4.7 Independent & Dependent Variables

1. Success Completion Time = y

Independent variables:

1. Procurement System = x_1
2. Currency Costing = x_2
3. Logistics Delivery = x_3
4. Causes of Delay = x_4

Coefficient Independent variables

1. Procurement System = β_1
2. Currency Costing = β_2
3. Logistics Delivery = β_3
4. Causes of Delay = β_4

4.8 Multiple Linear Regression

The model adequacy was tested (F-test) based on the results obtained from the SPSS output as shown in Table 4.17. The results indicate that the p-value is 0.000, less than the significance value ($\alpha = 0.05$). So, the H_0 can be rejected.

H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$

Table 12 ANOVA[a] analysis

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2.855	3	.952	22.990	.000[b]
	Residual	16.226	392	.041		
	Total	19.080	395			

Individual testing for the coefficient of regression (T-test) was done based on the results obtained from the SPSS output as shown in Table 4.17. Four hypotheses (procurement system, currency costing, logistics delivery and causes of delay) are defined for this test and stated as follows:

H_0: $\beta_1 = 0$ (Procurement System)

H_1: $\beta_1 \neq 0$

H_0: $\beta_2 = 0$ (Currency Costing)

H_1: $\beta_2 \neq 0$

H_0: $\beta_3 = 0$ (Logistics Delivery)

H_1: $\beta_3 \neq 0$

= 0.001, Currency Costing (β_2) = 0.000 and Logistics Delivery (β_3) = 0.003 are less than α (0.05). Therefore, all the relevant H_0 can be rejected, thus indicating that these independent variables are statistically significant. However, the p-value for Causes of Delay (β_4) = 0.525 is greater than α (0.05). Therefore, the H_0 cannot be rejected and this independent variable is not significant.

Table 13 ***Coefficients – Parameter Estimates***

Coefficients[a]

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zeroorder	Partial	Part	Tolerance	VIF
1 (Constant)	1.973	.386		5.112	.000			.152		
Procurement_System Design_Build	.203	.062	.165	3.269	.001	.273	.163		.854	1.171
Currency Costing_Design_Build	.272	.055	.249	4.964	.000	.318	.243	.231	.863	1.158
Logistics_Delivery Design_Build	.109	.036	.143	3.032	.003	.176	.152	.141	.982	1.019
Causes_of_Delay_Design Build	-.033	.051	-.030	-.636	.525	-.046	-.032	-.030	.994	1.007

Source: Data Collected by the researcher for research purposes

4.9 Explanation of the Significant Coefficients

The multiple linear regression analysis results reveal the influence of several key independent variables Procurement System, Currency Costing, and Logistics Delivery — on the dependent variable, which, in this case, is the Design & Build Success Completion Time. The coefficients associated with these independent variables represent the average change in the dependent variable for each unit increase in the predictor, while all other variables remain constant. This allows for a clear

understanding of how each factor impacts project completion time and provides valuable insights for practical application.

Specifically, the coefficient for the Procurement System is positive, indicating that an improvement or increase in this factor leads to better project performance. For every one-unit increase in the Procurement System score, the Design & Build Success Completion Time improves by 0.165 units, or 16.5%, assuming all other variables are held constant. This suggests that effective procurement practices play a significant role in accelerating project timelines, ensuring that materials, labor, and other resources are efficiently acquired and managed throughout the project lifecycle.

Similarly, the Currency Costing variable has a substantial impact on project completion time. A one-unit increase in Currency Costing results in a 0.249 unit (or 24.9%) improvement in Design & Build Success Completion Time. This highlights the importance of accurate and efficient currency management in construction projects, particularly in regions where currency volatility can affect costs. Ensuring stable currency management and cost controls can lead to smoother financial operations, reducing delays caused by financial mismanagement or unanticipated cost increases.

The Logistics Delivery variable also contributes positively to the dependent variable, with a coefficient of 0.143. This indicates that enhancing logistics management, such as improving the delivery of materials and equipment to construction sites, can lead to a 14.3% improvement in project completion time for each unit increase. Effective logistics reduces downtime and ensures that construction progresses without interruptions, making it a critical element for project success.

It is important to note that, except for one variable, all other independent factors in this model positively influence the project’s

success. The regression model provides a valuable tool for interpreting how improvements in specific areas can lead to better project outcomes. Construction companies can significantly improve their project timelines and overall efficiency by focusing on procurement systems, currency costing, and logistics delivery.

From a practical standpoint, construction firms operating in Tripoli and the broader Libyan market should prioritize these three areas in their project management strategies. Emphasizing strong procurement processes, accurate currency management, and streamlined logistics operations will ensure more efficient completion times, leading to higher customer satisfaction and increased competitiveness in the market.

4.10 The relationships among variables are examined by examining the study hypothesis

H1: There is a significant relationship between the procurement system and the successful completion time in Tripoli, Libya.

The empirical findings confirm that the procurement system has a statistically significant relationship with the time to successful completion of construction projects in Tripoli. Specifically, a 1 percent improvement in the procurement system results in a 16.5 percent increase in the efficiency of successful completion time. This highlights the crucial role of effective procurement systems in achieving project success, leading to the acceptance of the first hypothesis (H1).

These findings align with those of previous studies, such as Wang et al. (2020) and Kermani et al. (2024), which emphasize the universal importance of procurement in project management, regardless of the geographical or contextual differences. In the case of Libya, the government's efforts to bolster growth in the construction sector rely heavily on implementing robust

procurement systems. Mismanagement of this critical element can result in delays or even the failure to complete construction projects, underscoring its pivotal role in project success.

4.11 Currency Costing and Success Completion Time

The second objective of this study focuses on investigating the relationship between the currency costing factor and the success completion time of Design & Build construction projects in Tripoli, Libya. Currency costing is a crucial aspect of financial planning and project management, particularly in construction projects, where cost fluctuations and exchange rate variability can significantly impact timelines and outcomes.

The hypothesis for this objective is:

H2: There is a significant relationship between currency costing and success completion time in Tripoli, Libya.

The study's findings reveal a statistically significant relationship between currency costing and the success completion time of construction projects in Tripoli. Specifically, a 1 percent improvement in currency costing leads to a 24.9 percent increase in the effectiveness of success completion time. This result indicates that respondents place the greatest importance on currency costing, as evidenced by its high t-value, which reflects its critical role in ensuring timely project delivery. Consequently, the stated hypothesis (H2) is accepted.

These findings are consistent with previous studies, including those by Alzohbia et al. (2020) and Muftah (2024). which emphasize the importance of currency costing for project success. These studies highlight that effective cost management, including

accurate cost breakdowns and ongoing cost monitoring, is essential for maintaining financial control and ensuring timely project completion.

Importance of Cost Management in PMBOK Framework

Currency costing aligns with the PMBOK framework's knowledge area of cost management, which emphasizes the following four key processes:

1. **Planning Costs**: Developing strategies to manage financial resources effectively.
2. **Estimating Costs**: Calculating potential expenses and ensuring budget accuracy.
3. **Determining the Budget**: Allocating financial resources to various project phases.
4. **Controlling Costs**: Monitoring expenditures and mitigating deviations from the budget.

Respondents in Tripoli emphasized the critical nature of these processes, particularly the need for meticulous cost monitoring to avoid significant financial losses.

Implications for the Libyan Construction Sector

The consistent annual growth of Libya's construction sector, reported at 9.3 per cent (Oxford Business Group, 2018), underscores the importance of effective cost management. Industry stakeholders must adopt robust currency costing strategies to sustain this growth trajectory and mitigate risks associated with financial mismanagement. Given the dynamic economic landscape, enhanced currency costing practices could serve as a stabilizing factor, ensuring continued project success and sectoral development. Currency costing is an indispensable

success factor for construction project management in Tripoli, Libya. Effective cost management practices not only support timely project completion but also contribute to the sustained growth of the construction sector. This study highlights the need for industry players to prioritize financial planning and cost control to achieve better project outcomes.

Logistics, Delivery and Success Completion Time

The third objective of this study focuses on investigating the relationship between logistics delivery and the success completion time of Design & Build construction projects in Tripoli, Libya. Effective logistics delivery is a critical component in project management, particularly in construction projects, where timely and accurate delivery of materials and equipment is essential for maintaining schedules and minimizing delays.

H3: There is a significant relationship between logistics delivery and success completion time in Tripoli, Libya.

The findings from the analysis confirm that logistics delivery is a crucial success factor for construction projects in Tripoli. The statistical results indicate a significant contribution of logistics delivery to success completion time, accounting for 14.3 percent of the variation in completion efficiency. The t-statistic value of 3.032 further validates the strength of this relationship, leading to the acceptance of the hypothesis (H3).

This result highlights that a 1 percent improvement in logistics delivery can enhance success completion time by 14.3 percent. Respondents in the study underscored the importance of logistics

in ensuring projects are completed on time, within scope, and on schedule.

Importance of Logistics Delivery in Construction Projects

Logistics and delivery are fundamental elements of the supply chain network in construction projects. While the critical success factors (CSFs) literature has traditionally given less emphasis to logistics, this study underscores its pivotal role in project management. Efficient logistics delivery involves:

- **Planning and Coordination**: Ensuring that materials, equipment, and resources are delivered when needed.
- **Minimizing Delays**: Reducing disruptions caused by late or incorrect deliveries.
- **Supporting Project Milestones**: Ensuring all aspects of the project remain on schedule.

The findings indicate that industry stakeholders recognize the value of logistics delivery in facilitating smooth project operations and achieving project goals in Tripoli.

Broader Implications

The results align with the broader understanding of logistics in project management. Although not traditionally highlighted as a standalone success factor, logistics delivery is the backbone of efficient project execution. In Tripoli, where construction projects face unique challenges such as resource availability and urban infrastructure constraints, logistics delivery becomes even more critical.

This study adds to the growing evidence that logistics delivery is an essential driver of success in construction projects, supporting timely completion and contributing to overall project efficiency. Logistics delivery plays a significant role in the success of Design & Build construction projects in Tripoli, Libya. With a 14.3 per cent impact on success completion time, improving logistics processes can lead to more predictable and efficient project outcomes. These findings call for increased focus on logistics planning and execution within the construction industry to address potential bottlenecks and enhance overall project performance.

Causes of Delay and Completion Time

The fourth objective of this study was to investigate the relationship between causes of delay and the success completion time of design-and-build construction projects in Tripoli, Libya. The analysis focused on understanding whether delays, often highlighted in project management literature as critical factors, significantly impacted the timely completion of projects in this region.

H4: There is a significant relationship between causes of delay and success completion time in Tripoli, Libya.

The study results demonstrated that the causes of delays are not statistically significantly related to completion time in Tripoli's construction industry. The analysis showed a p-value greater than the 0.05 significance threshold, leading to the rejection of the hypothesis (H4). This suggests that, contrary to expectations, respondents did not perceive delays as a major factor affecting project timeline success.

5. Discussion

The study examined the impact of four independent variables procurement System, Currency Costing, Logistics Delivery, and Causes of Delay on the successful completion Time of design-and-build construction projects in Tripoli, Libya. The multiple linear regression analysis, supplemented with individual t-tests, revealed that three out of the four predictors significantly influence project completion time. These findings offer key insights into the managerial and operational dynamics shaping construction outcomes in the Libyan context.

Procurement System and Project Completion Time

The empirical assessment of our research model unveils a compelling positive correlation between the efficacy of the procurement system and project completion time ($\beta = 0.165$, $p = 0.001$), underscoring the pivotal role of optimized procurement processes in expediting project timelines ($\beta = 0.165$, $p = 0.001$). The obtained beta coefficient of 0.165, coupled with a highly significant p-value of 0.001, provides robust statistical evidence that advancements in procurement efficiency have a tangible and beneficial impact on the timely culmination of projects (Madzinga et al., 2020). This observation is supported by the understanding that streamlined procurement workflows facilitate the prompt acquisition of essential resources, thereby reducing the likelihood of material deficits and fostering greater synchronization among diverse project participants (Maagi & Mwakalobo, 2023).

The research shows that successful procurement processes depend on three elements: procurement systems, currency, and costing and logistics delivery. The study shows that procurement system

attributes function as technical components and also reflect the economic conditions affecting Libya economy during its post-conflict period. The Libyan currency system exhibits unstable behavior in its currency costs (β = 0.249) due to fluctuating exchange rates and a restricted monetary supply, which affects procurement procedures, contractor payments, and material acquisition. In this environment, management must develop a comprehensive financial plan to safeguard project success, as this is their primary responsibility.

Currency Costing and Project Completion Time

The empirical evidence reveals a statistically significant and substantial impact of currency-costing variables on project completion time (β = 0.249, p = 0.000), indicating that proficient currency management has a considerable influence on project timeline efficiency (Dong et al., 2025). The regression coefficient (β = 0.249, p = 0.000) strongly supports this assertion, indicating that a 1% improvement in currency management practices is associated with a 24.9% improvement in project timeline efficiency (Saiyalel, 2025). This finding underscores the paramount importance of meticulous financial planning and proactive exchange rate risk mitigation strategies, particularly in economies characterized by heightened currency fluctuations (Dong et al., 2025; Makdissi et al., 2023). Such economies often see time and cost overruns on large projects (Sovacool, & Ryu, 2025). The sensitivity of project timelines to currency fluctuations necessitates robust risk management frameworks and hedging strategies to safeguard project budgets and schedules from adverse impacts (Negi & Bajaj, 2025).. Organizations operating in volatile

currency environments must prioritize developing sophisticated financial models and forecasting tools to accurately assess and mitigate exchange rate risks throughout the project lifecycle (Musarat et al., 2024). The results support the PMBOK's cost management processes, which advocate rigorous planning, estimation, budgeting, and cost control to maintain project viability.

Logistics, Delivery, and Project Completion Time

Logistics delivery was another significant predictor ($\beta = 0.143$, $p = 0.003$), suggesting efficient logistics planning reduces project delays. Timely and accurate delivery of materials and equipment ensures the continuous progression of construction tasks, especially in resource-constrained environments like Tripoli. This result agrees with Mattar et al. (2025) and Kemboi and Osoro (2025), who argued that material supply issues are among the leading contributors to project inefficiencies. Furthermore, Ruzieh, (2025) observed that construction logistics directly influence site productivity and labor coordination. Enhancing logistics involves transport scheduling, supplier reliability, warehousing, and real-time tracking, all of which Libyan firms must prioritize to ensure efficient D&B project delivery.

Causes of Delay and Project Completion Time

Interestingly, the study found no statistically significant relationship between general causes of delay and project completion time ($\beta = -0.030$, $p = 0.525$). This contradicts a substantial body of literature (Alkaissy et al., 2022; Jahangoshai Rezaee et al., 2021) that traditionally identifies delays as major barriers to successful project execution. One potential explanation

for this deviation is the mature coping strategies that construction firms in Tripoli may have developed, such as adaptive scheduling, contingency planning, or frequent renegotiation with clients and suppliers. Another possibility is underreporting or the normalization of delays, where stakeholders have adapted their expectations due to prevailing instability, rendering delays less salient to perceived project success. This finding suggests a shift in perception where project managers might prioritize controllable operational elements (e.g., procurement, costing, logistics) over systemic or uncontrollable delays.

The regression analysis underscores the practical and theoretical significance of procurement efficiency, currency costing, and logistics delivery in shaping the successful and timely completion of Design & Build projects in Tripoli. These factors present actionable levers for construction managers seeking to enhance performance in a dynamic and challenging environment. Conversely, the lack of significance of delay-related factors invites further investigation into contextual variables that affect project resilience.

The research findings indicate that construction project delays are not statistically significant, according to existing construction management research. The results require further investigation because they do not match the expected outcomes. Libyan construction industry practitioners have begun to view project delays as the norm due to Libya prolonged instability. Therefore, practitioners prioritize factors they can manage, including procurement activities and cost management processes. The other possibility is that contractors in Libya have adopted adaptive

strategies, such as flexible scheduling, informal contracting practices, or contingency planning, to mitigate the effects of perceived delays on project success.

The research results disprove current theoretical frameworks that explain project success using predefined definitions of delay. The results demonstrate that organizations need to create project management systems that adapt to the unique requirements of executing projects in post-conflict environments.

Potential Reasons for the Findings:

Several factors could explain this divergence from the literature:

1. **Controlled Delay Risks**: Tripoli contractors, consultants, and project owners might have robust mechanisms to manage potential delays effectively. These could include proactive risk management strategies, efficient resource allocation, and streamlined stakeholder communication.
2. **Minimal Impact Delays**: The delays experienced in Tripoli's projects may be minor or easily manageable, reducing their perceived influence on overall project timelines.
3. **Context-Specific Dynamics**: The construction environment in Tripoli may have unique characteristics that limit the impact of delays. These could include shorter project durations, localized supply chains, or regulatory support that minimizes disruptions.

The finding suggests that while delays are widely recognized as critical in project management literature, their significance may vary depending on the context. In Tripoli, stakeholders appear to have established processes and controls that mitigate the risks

associated with delays, making them less of a hindrance to project success. The study concludes that causes of delay are not perceived as a significant factor affecting success completion time in Tripoli's construction projects. This highlights the importance of context-specific analysis when evaluating project management factors. For Tripoli's construction industry, focusing on other critical success factors, such as logistics, delivery, or procurement systems, may yield greater benefits in improving project efficiency and outcomes.

6. Theoretical Implications

The findings of this study have several key theoretical implications that contribute to the understanding of critical success factors (CSFs) in project management, particularly in the context of Design & Build construction projects in Tripoli, Libya.

Integration of Theoretical Frameworks: This study has leveraged interrelated theoretical perspectives—critical success factors, project management, and construction project frameworks—to identify determinants of success completion time. The findings reinforce the theoretical understanding that procurement systems, currency costing, and logistics delivery are significant factors influencing the efficiency and success of project management in Tripoli.

1. **Alignment with International Standards**: The research underscores that Tripoli's construction firms are adhering to internationally recognized standards, such as those outlined in the PMBOK (Project Management Body of Knowledge) Guide. Specifically, the role of procurement systems, currency costing, and logistics delivery aligns with best practices advocated globally. This demonstrates that the city's construction industry is employing globally accepted

project management principles to achieve success in its projects.

2. **Theoretical Emphasis on Logistics Delivery**: Logistics delivery, often overlooked in existing literature, has been identified as a critical success factor in this study. From a theoretical perspective, logistics delivery is conceptualized as a vital component of a project's supply chain. Elements such as transportation, inventory management, forecasting, and planning interact across various departments and stages of construction projects. This study highlights how efficient logistics can enhance overall functionality and interdepartmental coordination, ultimately driving success.
3. **Implications for Project Supply Chain**: This study advocates for increased attention to logistical planning by evidencing the relevance of logistics delivery in construction project management. The findings suggest that logistics is not merely an operational factor but a strategic one that influences the seamless execution of project components. Theoretical frameworks should thus integrate logistics delivery as a core construct when evaluating project success.
4. **Consistency with Existing Literature**: The findings also demonstrate that Tripoli's critical success factors align with broader discussions in the CSFs literature. The study’s results reinforce existing theoretical arguments while also expanding on underexplored factors such as logistics delivery, adding depth to the academic discourse.

Practical Implications for the D&B Method in Tripoli

The findings offer specific insights for improving Design & Build (D&B) projects in Tripoli. Local construction practitioners must prioritize logistics, costing, and procurement management. Effective project management in construction relies on these sub-domains working in harmony. Even the most robust project

management efforts may falter without proper attention to logistical arrangements, cost management, and procurement practices.

Recommendations for Industry Practices:

1. Enhance Logistics: Construction projects must integrate seamless supply chain practices to minimize disruptions. Effective logistics ensure that materials, equipment, and personnel are available at the right time and place, reducing delays and improving overall project efficiency.

2. Streamline Cost Management: Practitioners must adopt systematic cost management strategies to avoid budget overruns. This includes planning for costs, monitoring expenditures, and adjusting financial allocations in real-time to mitigate risks.

3. Optimize Procurement Systems: A robust procurement system is crucial for sourcing materials, selecting contractors, and managing contracts efficiently. Adhering to procurement best practices, such as open tendering, competitive bidding, and ensuring timely approvals, can significantly enhance project outcomes.

Practical Suggestions for Procurement Practices

A successful procurement system requires expertise and strategic planning. To achieve this, industry players should focus on the following aspects:

1. Technical Expertise: Procurement professionals must understand the technical specifications of materials and products to source the best quality items at optimal costs, ensuring timely delivery.

2. Financial Acumen: Procurement teams need strong financial skills to manage budgets effectively, allocate resources, and implement cost-efficient strategies for procurement processes.

3. Knowledge of Procurement Models: Practitioners must be well-versed in various procurement models, such as open tender, limited tender, negotiated tender, and lump sum contracts. It is critical to select the appropriate model based on project requirements.

4. Procurement Mechanism: Managing approvals, timing, delivery, cost, and quality within procurement processes ensures smooth execution. Tailoring these mechanisms to project-specific needs is essential for success.

5. Contractual Awareness: Understanding the contractual details, including sourcing materials internationally if needed, ensures compliance with project requirements. Transferring risks to suppliers (e.g., using CIF instead of FOB for shipments) can further safeguard project timelines and budgets.

6. Adopt E-Procurement Systems: Electronic procurement systems enhance transparency, accelerate tender submissions, and reduce delays.

This study presents evidence-based recommendations that will enhance the execution of D&B projects in Libya. Specifically, the recommendations are addressed to government authorities, regulatory agencies, and public-sector clients, and focus on both contractual and policy-related reforms.

1. Reform Public Procurement Policies

Given the crucial impact of procurement on project duration, government agencies must implement standardized, transparent public procurement systems. These systems should encompass:

E-procurement systems to boost transparency and reduce delays.

Clear tender evaluation criteria.

Encouraging competition among bidders.

Reform efforts to standardize public procurement will help eliminate inefficiencies and ensure projects are completed on time.

Common Procurement Challenges:

Issues such as incorrect technical specifications, an inefficient procurement team, and slow approval processes often result in significant delays. These challenges highlight the importance of equipping teams with the technical, financial, and managerial skills to manage procurement effectively.

Adopting good procurement practices is vital for successful project completion for construction practitioners in Tripoli. By systematically addressing logistics, cost management, and procurement, industry players can enhance their project management capabilities and minimize risks. Focusing on these areas ensures that projects are completed on time, within budget, and to the required quality standards.

1. Inclusion of Currency Risk Clauses in Contracts.

Public construction contracts must include formal rules for currency risk management, as fluctuations can have major cost impacts that require special controls. Public construction contracts must include formal rules for currency risk management, as fluctuations can have major cost impacts that require special controls. Public construction contracts need to include formal rules that establish dedicated systems for currency risk management, as currency fluctuations can have significant cost impacts. Public construction contracts need to include dedicated rules that establish formal systems for managing currency risk, as fluctuations can have major cost impacts. Public construction contracts need to include dedicated rules that establish formal systems for managing currency risk, as fluctuations can have major cost impacts. The contract provisions enable contractors and clients to manage currency risk and financial challenges arising from project interruptions. The contract provisions enable

contractors and clients to manage currency risk and financial challenges arising from project interruptions.

2. Implementing Logistics and Supply Chain Regulations.

National logistics frameworks to support construction activities should be developed by policymakers to address existing logistical challenges. National logistics frameworks which help construction activities should be developed by policymakers to solve existing logistical challenges through their development. The solution requires three actions which will create better transportation systems and port facilities while establishing a system to connect suppliers and contractors through regulatory frameworks and encouraging businesses to obtain their resources from local vendors. The solution requires three actions which will create better transportation systems and port facilities while establishing a system to connect suppliers and contractors through regulatory frameworks and encouraging businesses to obtain their resources from local vendors. The solution requires three actions which will create better transportation systems and port facilities while establishing a system to connect suppliers and contractors through regulatory frameworks and encouraging businesses to obtain their resources from local vendors. The solution requires three actions which will create better transportation systems and port facilities while establishing a system to connect suppliers and contractors through regulatory frameworks and encouraging businesses to obtain their resources from local vendors. The delivery process of materials will become more dependable while project operations will maintain their continuity. The delivery process of materials will become more dependable while project operations will maintain their continuity.

7. Future Theoretical Directions

The theoretical framework utilized in this study provides a robust foundation for further research. Future studies could explore

critical success factors in construction projects across different regions or environmental contexts to identify whether similar patterns emerge. Additionally, research could examine other unexplored factors that may influence project success, such as technological integration or cultural impacts on project management. The study's findings contribute significantly to the theoretical understanding of project management in construction. By highlighting the interconnected roles of procurement systems, currency costing, and logistics delivery, the research provides a comprehensive framework for understanding success factors. This framework can serve as a foundation for academic inquiry and practical application across diverse project management environments.

The findings of this research are invaluable to construction industry stakeholders, including clients, consultants, contractors, suppliers, project managers, government bodies, and other professionals. By addressing the impact of project performance on time, cost, delivery, and delays, these findings can guide practitioners in effective pre-planning and ensure well-executed projects. Future studies should consider qualitative methods or case studies to better understand the nuanced interplay between perceived and actual causes of delays, especially in post-conflict urban development settings such as Libya.

8. Limitations of the Study

Despite the usefulness of these study findings regarding the factors affecting the success of D&B projects in terms of project duration, some limitations should be considered when drawing appropriate conclusions.

1. Geographic Limitation

In conducting the research, the geographical scope was limited to Tripoli, the capital of Libya. Even though Tripoli is one of the main centers of construction activity, there are still some

differences in the situation prevailing elsewhere in Libya. This means that caution is warranted when generalizing the findings across the entire Libyan construction industry.

2. Sectorial Limitation

In conducting this study, emphasis has been placed only on D&B construction projects. This type of construction procurement practice is widely used in Libya, but it does not encompass other construction project practices such as design-bid-build and construction management.

Constraining Contextual Factor (Post-Conflict Scenario)

This research is carried out in a post-conflict economic and institutional context, characterized by currency fluctuations and logistical and regulatory problems. This contextual scenario can affect the variables under consideration in ways that differ from those expected in stable economies.

4. Methodological Limitation

The present research uses a quantitative methodology in a cross-sectional study using survey questionnaires. The main drawback of this method is the lack of depth that qualitative methodologies provide and the subjectivity inherent in respondents' perceptions.

9. Conclusion

This study was designed to identify the critical factors influencing the successful completion time of Design & Build construction projects in Tripoli, Libya. Using a quantitative research approach, data were collected from over 396 respondents, and multiple regression analysis was employed to examine relationships among key variables. The research focused on the core determinants: procurement systems, currency costing, logistics delivery, and causes of delay. These factors were incorporated into the research framework and rigorously tested. The findings aligned with

established literature while providing unique insights about Tripoli's context.

The results indicate that the successful completion of construction projects in Tripoli depends significantly on three main factors: procurement systems, currency costing, and logistics. Ensuring effective management and focusing on these elements are essential for achieving project timelines, especially as the construction sector in Tripoli continues to expand. Proper attention to these factors is critical to meeting the growing demands of the construction industry and ensuring project success.

This study achieved its objectives by analyzing various project-specific and organizational factors that influence the performance of Tripoli's construction industry. Key sectors, including civil, infrastructure, building, oil and gas, and multidisciplinary construction projects, were examined. The analysis also highlighted the evolving nature of project management practices, driven by technological advancements reshaping industry standards.

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