

A SEM ANALYSIS OF THE IMPACT OF UNETHICAL STAKEHOLDER BEHAVIORS ON CONSTRUCTION PROJECT FAILURES: AN OIL AND GAS INDUSTRY STUDY

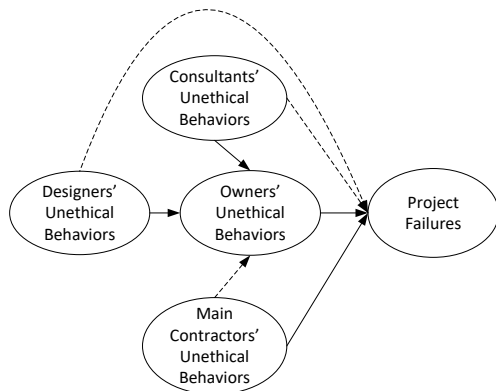
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Graphical abstract



Abstract

Continued unethical behavior by stakeholders within the oil and gas construction industry has a possible impact on the failure of many projects. This study therefore aims to investigate the impact of this type of behavior on the oil and gas construction industry. A conceptual framework was developed from both a literature review and interviews with 8 experts working on oil and gas construction projects in Myanmar, Malaysia and Thailand. A 31-item questionnaire was used to measure the 304 responses, from which a confirmatory factor analysis and structural equation model (SEM) were developed to investigate this impact. The results revealed that the most significant direct impact on a project's failure was a main contractor's unethical behavior. Furthermore, the study determined that the unethical behaviors of the consultant and designer had no direct impact on a project's failure but that there was an impact of the owner's unethical behavior. Ranked in order of importance, the indicators of a project failure are as follows: stakeholders' dissatisfaction; cost overrun; time overrun; negative effects on health, safety and environment; quality defects; and dispute and litigation. The results provide a guideline for developing a code of ethics to conduct unethical behavior investigations, which will help decrease future project failures.

Keywords: Stakeholder management, ethics evaluation, project failure, oil and gas, SEM

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1.0 INTRODUCTION

Mason [1] indicated that for building and design professionals, the incalculable value of human life demands nothing less than the highest moral considerations from those who might risk it otherwise. Unfortunately, in Thailand, news sources too frequently blast the tragic news of construction failures and the subsequent loss of human life [2]. This is supported by Thailand's National Statistics Office, in which data indicate that the construction industry poses the highest risk of major injuries and fatalities to workers compared to that in other industries [2]. Often times, these tragedies can be directly attributed to the unethical behavior or 'shortcuts' of some of the stakeholders involved in the project. It has been said that the cause of ethical failure in an organization can often be traced to its organizational culture and the failure on the part of the leadership to actively promote ethical practices [3]. This

is supported by a Price Waterhouse Coopers' 2016 report on economic crime in Thailand [4], in which it was determined that economic crime remains a serious issue affecting Thai organizations, with nearly 80% of incidents of wrong doing stemming from within organizations. According to Kang et al. [5], the construction industry is no stranger to issues of ethics, with research showing that the industry suffers from unethical problems both at the corporate and operational levels. In Malaysian research concerning unethical conduct within the construction industry, Adnan et al. [6] detailed a long list of examples including cover pricing, bid cutting, poor documentation, late and short payments, subcontractors' lack of safety ethics, unfair treatment of contractors in tender/final account negotiations, competitors' overstatement of capacity, and qualifications to secure work. Other examples include competitors' falsification of experience and qualifications and bureaucratic government policies. Ray et al. [7] also added

improper tendering practices such as withdrawal, bid cutting, cover pricing, and compensation of tendering costs, while Vee and Skitmore [3] added collusive tendering behavior. Abdul-Rahman et al. [8] further suggested that unethical conduct among civil engineers within the construction industry consisted of fraud, bribery, and collusive tendering. In the examination of what constitutes ethical conduct, however, Mason [1] suggested honesty, fairness, fair reward, reliability, integrity, objectivity, and accountability. This was consistent with Suen et al. [9], who identified ethical business practices in construction contracting as integrity and honesty from beginning to end. From the outcome of the literature review, the researchers noted the lack of research concerning the impact of unethical stakeholder behaviors on project failures. Therefore, the objective of this study was to inspect the impact of unethical stakeholder behaviors on failures of oil and gas construction projects, from which the knowledge will help reduce future project failures and the potential loss of human life.

2.0 LITERATURE REVIEW

2.1 Construction Industry Project Failure

The success and failure of construction projects are two sides of the same coin [10], with many researchers and professionals elaborating on which indicators are key to a project's success. This is consistent with Pinto and Mantel [11], who mentioned that the success or failure of a project is measured by the difference between project expectations, both during and after completion, and the actual observed performance of the project when applied. Maktoumi et al. [13] identified key project success indicators as on time project delivery, on budget project delivery, and desired quality outcomes.

McManus and Wood-Harper [10] added time overrun, cost overrun and defect of quality as components in the perception of project failure. After conducting research on 97 construction projects in the USA, Pinto and Mantel [11] also suggested that the level of failure depends on the budget and schedule implementation process, the perception of quality, and owner satisfaction. Dusso and Bayeh [14] pointed out that time overruns can instigate other negative effects on building construction projects such as increasing costs and disputes between the parties involved, which was also confirmed by Chan and Kumaraswamy [14], as well as adding disputes and litigation problems, which are frequent problems within the Nigerian construction industry. Ikediashi et al. [15] analyzed project failure factors for infrastructure projects in Saudi Arabia and determined that the most important factors were budget overruns and ethics. Other researchers and professionals have also discussed construction project failures in terms of quality defects [16], negative effects on safety, health and the environment [17], stakeholders' dissatisfaction [14], and disputes and litigation.

Based on the above and other literature reviews, six primary project failure indicators were identified. These have been summarized in Table 1 as follows: (1) time overruns, defined as the inability to meet contract deliverables within the stated contract time; (2) cost overruns, which involves unexpected costs incurred in excess to budgeted amounts due to an underestimation of the actual costs during budgeting; (3)

quality defects, which occur when project-specific specifications and standards are not met; (4) stakeholders' dissatisfaction, defined as dissatisfaction with the overall construction project when the project is completed; (5) negative effects on safety, health and the environment, defined as accidents and injuries during operation to individuals inside and outside of the project, which also includes health and environmental impacts during and after construction; and (6) disputes and litigation, which sometimes arise when project deliverables are not met on time, at cost, and at the quality level defined.

Table 1 Project failure factors in the construction industry

No.	Project Failures	References
1	Time overruns (PF1)	[11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22]
2	Cost overruns (PF2)	[11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22]
3	Quality defects (PF3)	[11, 12, 13, 14, 16, 17, 19, 20, 21]
4	Stakeholders' dissatisfaction (PF4)	[11, 13, 16, 17]
5	Negative effects on safety, health and the environment (PF5)	[16, 17, 19, 20]
6	Disputes and litigation (PF6)	[12, 13, 14, 16, 17, 18, 21]

2.2 The Evaluation of Stakeholders' Unethical Behavior Within the Construction Industry

In recent years, ethics has become a subject of research in various fields, but according to Price Waterhouse Coopers [4], approximately 20% of the companies in Thailand have no formal ethics and compliance programs in place. From the same survey, 64% of the respondents felt that opportunity was the main driver of internal fraud, far outweighing other elements including incentives/pressure and rationalism.

Ray et al. [7] examined the Australian construction tender process and defined ethical behavior as a set of moral principles or set of values that are relevant to what is right or wrong, good or bad. Kang et al. [5] suggested that ethics are moral principles that regulate proper human behavior. This is in agreement with standards devised by the Academy of Human Resource Development [23]. In their document, they proposed a comprehensive list of standards on ethics and integrity, including competence, integrity, professional responsibility, respect for people's rights and dignity, and concern for others' welfare social responsibility. Loo [24] discussed business ethics assessment as using multidimensional measures such as justice, rights, relativism, egoism, utilitarianism and deontology.

Vee and Skitmore [3] investigated project managers, architects and building contractors, and determined that although 90% subscribed to a professional code of ethics, all had witnessed or experienced some degree of unethical conduct in the form of unfair conduct, negligence, conflicts of interest, collusive tendering, fraud, confidentiality and propriety breaches, bribery and violations of environmental ethics. Russ-Eft [25] examined professional ethics and used the Program Evaluation Standards (Joint Committee on Standards for Educational Evaluation), the Guiding Principles (American Evaluation Association), and the Standards on Ethics and

Integrity (Academy of Human Resource Development) for evaluation. This was similar to Mason [1], who used the Society of Construction Law's Statement of Ethical Principles to promote a single ethical code for the construction industry based on research in the UK, USA, Australia and South Africa. It was determined that ethical behavior is the compliance with ethical principles including honesty, fairness, fair rewards, reliability, integrity, objectivity, and accountability.

Table 2 Stakeholders' behavioral factors in construction projects

Stakeholders' Behaviors	References	
Owner	1. Poor communication and coordination	[12, 18, 19, 20, 21, 26, 27, 28, 29]
	2. Late in handing over site	[12, 19, 21, 27, 28, 29, 30]
	3. Late in progress payments	[12, 14, 18, 19, 20, 27, 28, 29, 30, 31, 32, 33]
	4. Interference and suspension	[27, 32]
	5. Unrealistic contract duration imposed	[20, 26, 27, 29, 32]
	6. Negligence in making decisions and approval	[12, 18, 19, 20, 21, 27, 28, 29, 30, 31, 32, 33]
Consultant	1. Poor communication and coordination	[18, 19, 20, 26, 27, 28]
	2. Poor supervision and project control	[27, 29, 32, 33]
	3. Poor qualification of staff assigned to the project	[20, 26, 29, 31]
	4. Late in performing inspection	[26, 29, 31, 33]
Designer	1. Poor communication and coordination	[18, 19, 20, 26]
	2. Insufficient data collection and survey	[14, 21, 26, 28]
	3. Design errors and omissions	[14, 19, 20, 21, 26, 28, 30, 31]
	4. Assigned design team has inadequate experience	[14, 20, 26, 28, 30]
	5. Late in producing design documents	[14, 20, 21, 26, 28, 30]
Contractor	1. Poor communication and coordination	[12, 18, 19, 20, 26, 29, 30]
	2. Late in payments to subcontractors and suppliers	[12, 18, 19, 20, 21, 26, 28, 29, 30, 31, 32, 33]
	3. Poor planning and scheduling	[12, 14, 18, 19, 20, 21, 26, 27, 28, 29, 30, 31]
	4. Poor project management and site supervision	[12, 14, 19, 20, 21, 26, 27, 28, 29, 31, 32, 33]
	5. Use of unacceptable construction techniques and methods	[19, 26, 27, 28]
	6. Lack of safety rules and regulations	[14, 26, 32]
	7. Lack of transparency in the procurement process	[21, 32]

Based on the literature review, it was concluded that unethical behavior is an action that has a negative effect on others or on society and one's community. The stakeholders' unethical behaviors in this study include actions such as dishonesty, a lack of straightforwardness, unfairness, and irresponsibility. Table 2 presents a summary of the stakeholders' behaviors that have a negative effect on

construction projects. Stakeholders in this study are defined as the owners, consultants, designers, and main contractors.

On larger scale construction projects, Toor and Ogunlana [17] pointed out that project quality is dependent on ethical behavior, while Abdul-Rahman et al. [8] stated that unethical stakeholder behaviors contribute significantly to a construction project's final quality. This is consistent with PWC [4], which discussed "the integrity chain" and reported that unethical behavior, such as the use of unspecified materials or not following procedures and specifications, have a relationship with safety and quality performance. Suen et al. [9] also confirmed that the management of ethics is a significant part of managing a construction project's performance, which is also an important aspect of a project's potential for failure or success. Ikediashi et al. [16] suggested that ethical issues need to be addressed in project failures.

The review of the literature therefore reveals that it is possible that stakeholders' unethical behaviors, in terms of construction project execution, can impact a project's failure. However, the possible impact has never been proven. Thus, this study was designed and developed a conceptual framework with research hypotheses to examine the possible impact of stakeholders' unethical behaviors on a project's failure.

3.0 RESERCH METHODOLOGY

The development of the research hypotheses and conceptual framework was performed in three steps. In the first step, the literature and theory on project failures and stakeholders' unethical behavior evaluation within the construction industry were reviewed. Then, the stakeholders' behaviors that have negative effects on construction projects were summarized in Table 2. In the second step, deep interviews were conducted with 8 experts who have 20 or more years of expertise as stakeholders in oil and gas construction projects. From these interviews, determinations and comparisons were made concerning stakeholders' unethical behaviors in comparison to that reported in the reviewed literature. This analysis is summarized in Table 3. Finally, the research hypotheses and conceptual framework were developed to determine the impact of stakeholders' unethical behaviors on a project's failure (Figure 1). The 7 research hypotheses are as follows:

H1: Owners' unethical behaviors have a positive direct impact on project failures.

H2: Main contractors' unethical behaviors have a positive direct impact on project failures.

H3: Main contractors' unethical behaviors have a positive indirect impact on project failures through the intervening role of owners' unethical behaviors.

H4: Consultants' unethical behaviors have a positive direct impact on project failures.

H5: Consultants' unethical behaviors have a positive indirect impact on project failures through the intervening role of owners' unethical behaviors.

H6: Designers' unethical behaviors have a positive direct impact on project failures.

H7: Designers' unethical behaviors have a positive indirect impact on project failures through the intervening role of owners' unethical behaviors.

Table 3 Factors influencing project failures due to unethical stakeholders' behaviors

No.	Stakeholders' Unethical Behaviors
1	The project owner neglected to provide clear information to the stakeholders (OUB1)
2	The project owner was negligent in handing over the construction site to the contractor in the agreed upon time (OUB2)
3	The project owner intentionally planned to prolong the payment process after the work was completed as agreed (OUB3)
4	The project owner interrupts and suspends work without cause (OUB4)
5	The project owner's intent is to have an unrealistic and unachievable contract schedule (OUB5)
6	The project owner is negligent in the decision-making, review, and approval of project documents, including changes that impact the project's scope and completion (OUB6)
7	The project consultant neglected to communicate and coordinate with the stakeholders (CUB1)
8	The project consultant is negligent in the supervision and control of the project (CUB2)
9	The project consultant intentionally assigned inexperienced and poorly qualify personnel to the project (CUB3)
10	The project consultant is negligent in the review and approval of project documents, including performing inspections that impact the project's scope and completion (CUB4)
11	The project designer neglected to provide an answer technical query, which impacted the stakeholders (DUB1)
12	The project designer neglected to perform a site survey, which impacted the design document (DUB2)
13	The project designer ignored the design steps and processes (DUB3)
14	The project designer deliberately assigned work to an inexperienced design team (DUB4)
15	The project designers neglected to produce and deliver design documents on time (DUB5)
16	The main contractor's intent is to provide unclear and untrue information to the stakeholders (MUB1)
17	The main contractor's intent is to prolong payment after work has been completed by the subcontractor or delivered by the supplier (MUB2)
18	The main contractor is negligent in planning and scheduling (MUB3)
19	The main contractor is negligent in project site management and supervision (MUB4)
20	The main contractor uses unacceptable construction techniques and methods (MUB5)
21	The main contractor is negligent in safety procedures and regulations (MUB6)
22	The main contractor lacks transparency in the procurement process (MUB7)

To test and inspect the developed hypotheses, a questionnaire was designed based on a conceptual framework of 5 latent variables and 28 observed variables. These variables are outlined in Table 1 and Table 3. In Part 1 of the questionnaire, there were 3 items related to the respondents' general characteristics, including position level, experience, and type of organization. In Part 2 of the survey, 28 items were used to evaluate the importance of the respondents' opinions related to stakeholders' unethical behaviors and their relationship to a project's failure.

For this purpose, a five-level Likert-type [34] agreement scale was used, with "1" indicating "the importance of that factor is very low" to "5" indicating "the importance of that factor is very high" as the anchor points, and "3" representing the response "the importance of that factor is moderate". To ensure variable and content validity, the questionnaire was evaluated by 8 experts in the oil and gas construction industry.

The sampling frame was generated from the private company units listed in the Department of Business Development Directory. The sampling units were all involved in oil and gas construction projects. Then, the samples were randomly selected from this sampling frame, i.e., owners, contractors, consultants, and designers. A pilot study of 22 questionnaires was performed. These questionnaires were sent to supervisors and management level personnel at ongoing oil and gas construction projects in Yangon, Myanmar, Kuala Lumpur, Malaysia and Bangkok, Thailand. Thereafter, an online survey was developed using Google Forms. The *Spearman's rank* correlation coefficient was used to test the construct validity of the questionnaire, as it measures the relationship between factors. The results showed that all the observed variables were correlated, indicating the construct validity of these variables [34]. Additionally, Cronbach's alpha was used to test the reliability of the questionnaire scale. The reliability coefficient value ranges between 0 and 1, with a value of +1 indicating a high reliability [35]. The reliability of the study questionnaire scale was calculated as 0.944, indicating high reliability.

The questionnaire survey method was used to collect the personal information of and specific opinions on project failure causes due to unethical stakeholders' behaviors from professionals with various levels of related experience in oil and gas construction projects. A confirmatory factor analysis (CFA) was performed to confirm the relationships between the sets of 28 observed variables and 5 latent variables. A CFA is the measurement component of a structural equation modeling analysis, which also helps to reduce errors or mistakes when measuring observed factors. Arbuckle [35] indicated that when accessing measurement models, a CFA is used, followed by structural equation modeling (SEM), to examine the general fit of the proposed model with the data as well as to identify the overall relationships among the constructs. The Amos user's guide suggests that a root mean square error of approximation (RMSEA) value of approximately 0.05 or less indicates a close fit of the model in relation to the degrees of freedom [35]. Then, the conceptual framework was executed using an SEM and adjusted until the model met the SEM analysis criteria.

A structural equation modeling (SEM) analysis was conducted using the Amos software program [35]. The indices used to assess the model's consistency included the *p*-value, relative chi-square (χ^2/df), goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), incremental fit index (IFI), and root mean square error of approximation (RMSEA). The criteria and index values for the GFI [36] are presented in Table 4.

4.0 RESULTS AND DISCUSSION

From the responses generated using Google Forms, a total of 304 questionnaires were verified as useable from the original

400 questionnaires sent, giving a response rate of 76.0%. From the sample of 304, 3.3% were determined to be in executive management (e.g., chief executive officer, senior executive officer, managing director, or deputy managing director), 23.0% indicated they were at the middle management level in their career (e.g., general manager, business development manager, project manager, construction manager, safety manager, QA/QC manager, engineering manager, procurement manager, or planning and cost control manager), 27.6% were chief or senior level engineers (e.g., chief engineer, senior project engineer, senior construction engineer, senior planning engineer, engineering team leader, procurement team leader, or construction site representative), while the majority (46.1%) were engineer and officer level support (e.g., project engineer, project coordinator, construction engineer, planning engineer, cost engineer, civil engineer, mechanical engineer, electrical engineer, procurement engineer, or safety officer).

Table 4 shows the results from the goodness-of-fit criteria and recommended index values, while Figure 2 shows the final SEM modeling results. The analytical results for the SEM

indicated multiple values for the goodness-of-fit index, which confirmed the accuracy of the model fit. The SEM analysis with Amos 20 determined the accuracy of the model fit from the goodness-of-fit index. As confirmation of this finding, Hair et al. [36] have indicated that factor loadings or regression weight estimates of latent to observed variables should have values greater than 0.50, which indicates that all the constructs conform to the construct validity test and validity convergence. Further confirmation was established as the results of the GFI equaled 0.943 and the AGFI equaled 0.916; these values were in accordance with recommended index values by [36]. The RMSEA was equal to 0.020, which was in agreement with the recommended index values by [35].

A direct impact of owners' unethical behaviors on project failures was shown to exist as there was a standardized regression weight of 0.330, with a $p < 0.001$, as shown in Figure 2. The results reinforced previous research [1,8] in which an increase in owners' unethical behaviors significantly impacted the chances of a project's failure. Therefore, hypothesis H1 was accepted.

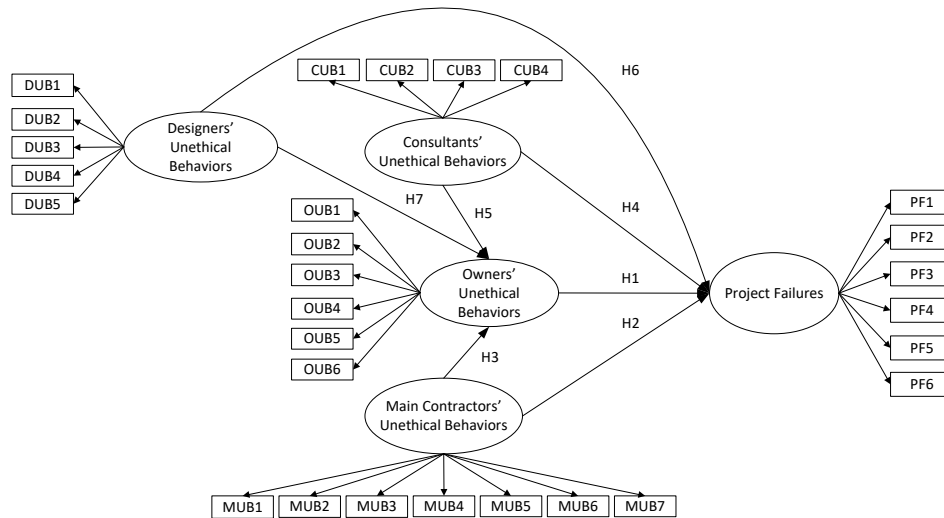


Figure 1 Conceptual framework

Table 4 Goodness-of-fit criteria and indices

Goodness-of-fit criteria (Recommended index values)	Confirmatory factor analysis, CFA					Final SEM
	OUB	CUB	DUB	MUB	PF	
p-Value ($0.05 < p \leq 1.00$)	0.118	0.264	0.111	0.078	0.062	0.056
Relative chi-square ($0 \leq \chi^2/df \leq 2$)	1.605	1.333	1.880	1.597	1.860	1.140
Goodness-of-fit index ($0.09 \leq GFI \leq 1.00$)	0.989	0.996	0.992	0.983	0.987	0.943
Comparative fit index ($0.09 \leq CFI \leq 1.00$)	0.975	0.997	0.984	0.979	0.988	0.985
Incremental fit index ($0.9 \leq IFI \leq 1.00$)	0.976	0.997	0.984	0.979	0.988	0.985
Tucker-Lewis index ($0.9 \leq TLI \leq 1.00$)	0.952	0.991	0.960	0.965	0.978	0.979
Adjusted goodness of fit index ($0.9 \leq AGFI \leq 1.00$)	0.970	0.982	0.970	0.964	0.965	0.916
Root mean square residual ($0 \leq RMR \leq 0.05$)	0.010	0.005	0.007	0.012	0.007	0.014
Root mean square error of approximation ($0 \leq RMSEA \leq 0.08$)	0.041	0.031	0.050	0.041	0.049	0.020

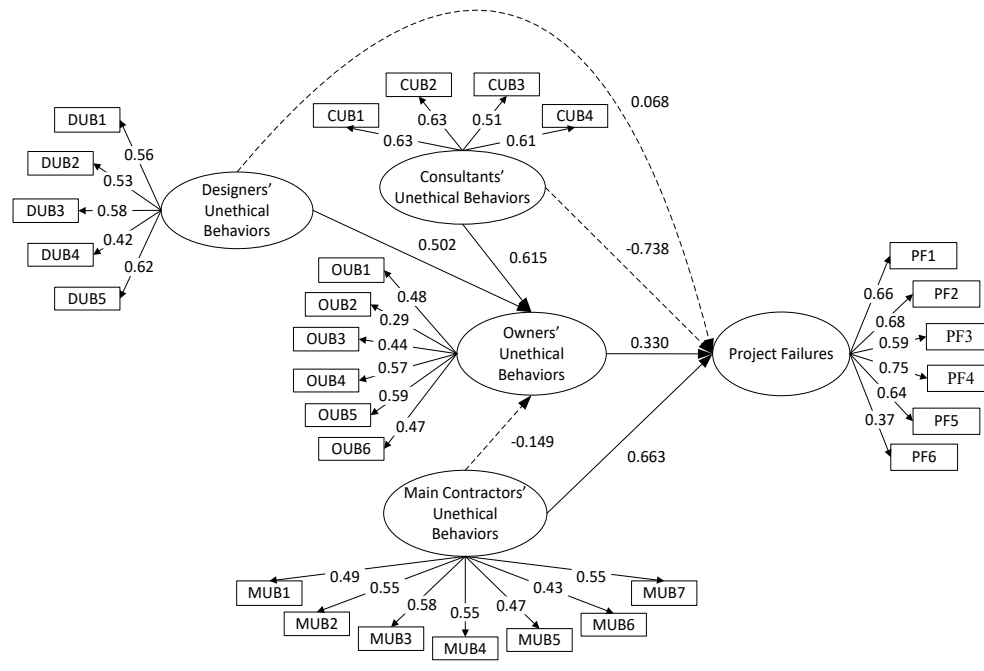


Figure 2 Final SEM model

The main contractor's unethical behavior also exhibited a significant direct impact on a project's failure, as the calculated direct impact standardized regression weight was 0.663, at a $p < 0.001$. Therefore, H2 was also accepted. The research findings are supported by other studies including Vee and Skitmore [3], who indicated that the main contractor's unethical behaviors have a negligent effect on safety procedures and regulations. In Thailand, Jitwasinkul et al. [37] concluded that an improvement in safe work behavior can be obtained by controlling leadership, management commitment, participation, and the perceived behavioral control node of stakeholders.

Concerning hypothesis H3, it was determined that there was no significant correlation between a contractor's unethical behavior and a project's failure if the process is mediated by the owner's unethical behaviors (the standardized regression weight was negative at -0.149). A contributing reason for this finding is that in most oil and gas construction projects in Myanmar, Malaysia and Thailand, the project owner will assign a consultant to manage and control the main contractor for them. Therefore, unethical behavior by the main contractor has no direct relationship with the owner's unethical behaviors, and H3 was rejected.

The role of consultants and their unethical behavior was also studied. From the results, it was determined that there was no direct impact of the consultants' unethical behaviors on a project's failure because the standardized regression weight was negative (-0.738). Therefore, hypothesis H4 was rejected. In the investigation concerning the designer's unethical behaviors and the impact on a project's failure, H6 was

rejected, as the standardized regression weight was 0.068 at a $p > 0.05$.

However, hypotheses H5 and H7 were accepted, as the standardized regression weights were 0.615 at $p < 0.001$ and 0.502 at $p < 0.001$, respectively. The reasons for these findings include the fact that the working process of consultants and designers are reviewed and approved by the project owner. In turn, for oil and gas construction projects, unrealistic time given by the owner to the designers leads to poor performance in the design phase [30]. Therefore, if the consultant and designers' unethical behaviors increase together with the owner's unethical behaviors, the potential for the project to fail also increases. Additionally, if there is unethical collusion between the project's principals including the consultants and the owners, project failure is almost assured, especially when the owner is a government agency [6].

The results of this study are in accordance with the research by Suen et al. [9], in which the unethical behaviors of stakeholders were determined to be an important element in construction project performance. Stakeholders' unethical behaviors also impact the financial performance and reputation of the industry and are important for safety and quality [1,4]. Additionally, Abdul-Rahman et al. [8] mentioned that stakeholders' unethical behavior has a significant effect on a project's quality in the construction industry. Additionally, the findings of this study are in agreement with those of other studies in which the factors that have the greatest impact from unethical behaviors are time overruns, cost overruns, quality performance, and dissatisfaction of all parties, including disputes and litigation [14, 16, 17].

5.0 CONCLUSION AND APPLICATION

In summary, stakeholders' unethical behavior has both a direct and indirect impact on a project's failure. The results showed that the unethical behaviors of a project owner and main contractor can have a direct impact on a project's failure. The study determined that the unethical behaviors of the main contractor highly impact the failure of a project. However, the main contractor's unethical behavior has no relationship with the owner's unethical behavior. Furthermore, the unethical behaviors of consultants and designers will have an indirect impact on a project's failure through the intervening role of the owner's unethical behaviors, but the unethical behaviors of the consultant and designer will not have a direct impact.

This study has made a contribution by filling a knowledge gap in the proposed conceptual model concerning the impact of stakeholders' unethical behavior on oil and gas construction project failures. The model can be applied to help develop and generate a code of ethics for construction projects, as well as to help increase industry and government awareness of the issues and prevent construction failures leading to the tragic loss of life [37]. In addition, the model can be applied to cultivate better organizational culture in groups of stakeholders.

In application of the model, project and construction managers who are responsible for stakeholders can benefit from the model by using its framework to develop a code of ethics to conduct ethical behavior investigations, which are comprised of the following two phases. In the first phase, the prequalification process, stakeholders' compliance with the previously stated ethical behavior code should be evaluated. If a stakeholder has demonstrated non-compliance with the stated code, that stakeholder should be omitted from the prequalification process. For example, in the prequalification of designers, if a designer has demonstrated past unethical behaviors by intentionally providing unclear and untrue information to other stakeholders, they should be eliminated from the prequalification list. In the second phase, during project implementation and execution, there should be a stakeholder ethics evaluation. If the stakeholders are not found to be in compliance with the ethics code, project managers should remind the offending parties of the code and implement procedures to rectify the situation, prevent further incidents and reduce the project's potential failure.

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