Analysis of Organizational Internal Factors Influencing Construction Risk Management among Construction Industries

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Abstract

Many previously conducted empirical studies have displayed mixed findings about the influence of internal factors within an organization on the management of risk among construction companies. Hence, there is a need for introducing a moderating variable to this field of study. The aim of this research was to confirm whether coercive pressure plays a significant role in the relationship between the management of risk in construction and factors within the organization. Therefore, this study examined the influence that internal organizational factors and coercive pressure have on the management of construction risk through the lens of discouragement and organizational control theory, and institutional theory. Data were collected through the distribution of questionnaires involving 165 workers working in the Malaysian Peninsular construction companies, and the analysis was performed by means of partial least squares structural equation modelling. Results revealed a positively significant connection between internal organizational factors and the management of construction risk. Also, coercive pressure and the management of construction risk has a positively significant relationship. Coercive pressure mediated the connection that organizational internal factors had with the

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management of construction risk. A discussion of the research implications was done from the point of view of Malaysia. In conclusion, the reduction of risk incidents in the process of carrying out construction activities is being facilitated by active leadership and organizational culture. In addition, the rate and period at which accidents occur during and after the completion of construction activities are reduced by coercive pressure. In the same way, some influential internal factors of organizations as well as the introduced coercive pressure in the process of managing construction risk have established that many construction companies that apply the necessary internal factors as well as the coercive pressure introduced by the government are able to make delivery of their construction task at the specified cost, time, and qualities, thus establishing them as the correct standard for measuring a well-constructed project.

Keywords: Construction risk management; Organisational internal factors; Coercive pressure; Partial Least Squire (PLS); Construction Industry.

Introduction

The management of risk involves systematic procedure of recognizing, analysing, responding, and controlling and monitoring project risk. It might not be possible to totally eliminate or prevent risks from happening during the construction process, so a good risk management is supposed to make proper plans to avoid or reduce to a large extent the occurrence of risk so that it does not negatively influence the project. This can be achieved by using appropriate tools and techniques which can support the decision maker in handling the risk in a perfect and appropriate manner [1]. The construction sector, perhaps more than others, is overloaded by risk as a result of the unpredictable nature of construction projects [49], [40]. In addition, [11]; [34]; [7] states that risk and uncertainty can be described as settings where the outcome of an event or activity is most likely to deviate from the estimated value. Therefore, risk can have potentially disastrous outcomes on construction projects. The productivity, efficiency, quality and cost of a project are all influenced by risk. Wainwright, [20] provides many cases of non-accomplishment of project works with regard to time, quality, and cost of projects as a result of the non-availability of required tools and right techniques to manage risk in project management. Thus, the success of a project namely, the time needed for completion, sticking with the original budget, and achieving the required performance rest on the skill of each member in risk management.

Moreover, Adeleke et al., [7] point out that risk management could also be beneficial in improving profits. For this reason, a project's success mostly is contingent on the systematic and successful handling of risks. This makes risk management a topic well deserved to be studied. However, the main aim of risk management is not to eliminate all risks from a project. The purpose is to create a framework to support decision-makers to handle the risks efficiently and successfully. The application of different project management tools and techniques should be implemented from the

planning to the closing stages of a project, which involves handling the different risks linked to the project at every stage. Thus, the process of risk management can be considered a vital part of managing project [3].

Adeleke et al., [6] specify that construction risk management has connection with some factors within an organization (valuable communication, dynamic leadership, culture within organization). It has been duly considered that coercive pressure has the possibility to enhance our theoretical understanding and, at the same time provide empirical evidence of how it can influence the connection that organizational internal factors and construction risk management have. For this reason, coercive pressure is adopted as a mediating variable between organizational internal factors and construction risk management among construction companies in Peninsular Malaysia.

Literature review

Among the construction companies in Malaysia, the management of risk is still a new concept and just few construction practitioners and companies utilize the tools and techniques of risk management. According to Adnan & Morledge, [8], Ismayana and Adeleke [39] and Omer et al., [41], the construction industry of Malaysia has not been very effective in managing risk. The identification stage of risk management in each project is quite different in various projects. It basically depends on the characteristics of each construction project and it must start at the very initial stage. In Malaysia, contractors apply straightforward, fast, and inexpensive methods for identifying risk, such as checklists and brainstorming discussions. But risk analysis requires proper experience, training, a risk management software, and specialist to give advice on the appropriate responses and necessary techniques. In Malaysia, contractors only focus on and respond to events with probably high-risk occurrence and high impact on projects. Yet, not all the companies perform the acceptable operations of reporting, reviewing, and monitoring the on-going risk management activity [2]. Lee & Azlan [36] state that risk management is still a fresh concept in the Malaysian construction industry.

Furthermore, Kang et al., [31] have confirmed that risk management still remains a very serious concern in the Malaysian construction industry due to lack of knowledge about it. In addition, contractors are very unwilling to apply risk management tools to reduce the operational expenses of projects. Norazian et al., [38] have further confirmed that risk management is practised only by companies with high reputation, stable financial status and companies dealing in large construction projects, although the number of practitioners in Malaysia are only few. However, the construction industry of Malaysia still requires a better understanding of the risk factors. Although risk management approach has been established, the majority of them are not well structured and are not being applied in a formal manner. As a result, there is still reasonably high risks occurrence in the Malaysian construction industry.

There has been a serious debate regarding the predominantly adopted means of managing risk in the construction companies. It has been observed that the method(s) have not been producing the expected results as regards the prompt delivery of construction tasks by the contractors as specified in the budget and at the same time maintaining quality. For this reason, proper and systematic method, as well as having sufficient knowledge and experience in handling previous construction projects will facilitate efficient and effective risk management approach. For instance, the knowledge of any possible occurrence while executing construction projects is very necessary. As a result, the management team will be able to easily evaluate the possibility of risk occurrence, and then choose the possible method(s) to prevent or handle the risk in case it eventually happens.

It has been established by a number of studies conducted by various researchers [2], [5] that specific organizational internal factors (valuable communication, dynamic leadership, culture within organization) have relationship with the management of risk in construction companies. Therefore, because coercive pressure has not been widely known, it is the intention of the researcher to introduce it so as to know its effectiveness as a moderator of the aforementioned variables. Including coercive force as a moderator will facilitate a deeper theoretical understanding and demonstrate empirical evidence of the extent to which the mediating variable (coercive pressure) can impact the connection that some factors within organizations and the management of risk among construction companies in Peninsular Malaysia have.

Kumaraswamy and Chan [32] considered organizational factors to be imperceptible possessions which are not physically seen. They further explain that these internal factors are constructs that are multidimensional in nature. They comprise the following three aspects: effective communication, active leadership, and organizational culture. Husain et al., [28] state that effective communication is one of the tools required in order to minimize the extent of risk among construction companies for successful accomplishment of projects. In addition, effective communication is needed in order to make effective delivery and to achieve productive communication outcome [6]. In a series of studies conducted by Moe & Pathranarakul [37], findings suggest that effective communication has significant role in the completion of a construction project. Besides, the information exchange that comes from a number of parties among various individuals and industries will positively make impact on a construction project. In the participative leadership theories, leadership gives a chance to followers to engage more in the decision-making process [16]. Very many studies in the past have focused on leadership styles, behaviour and strategies. A successful project requires different kinds of leadership from the normal routine project work. In a construction project, there is need for active leaders who can take serious actions on runtime in order to avoid making the situation worse [4]. In active leadership, both the led and the leaders' transcendence interest are represented. This is in agreement to Bennis' [13] improved concept that "active leadership is the ability of touching souls of others by an individual in a manner which raises the consciousness of human intent, builds meanings and inspires humans as the source of Power". The active leadership includes six factors:

idealized influence, motivation, inspiration, stimulation, intellectual and individualized consideration [21]. For active leadership to respond to normal risk event there is need to have proactive leaders not reactive ones. Proactive leaders give instructions in a project and reactive leaders try to bring a solution to the existing and foreseeable events in the projects. Proactive leaders are able to successfully complete a project based on the estimated budget and time. Proactive leadership is required when some uncertain events occurred in a project. The proactive leaders are the firelighters while the reactive leaders are the fire-fighters. Before a successful project can be attained, it is required to move from reactive to proactive leadership [29]. Culture, from the anthropological and sociological viewpoints, is described as asset of beliefs, attitudes, values, practices that a group of persons shared or embraced [47]. According to Sakarina [46], cultural influences are signified by the acceptability of the public and the locals in particular activities. Many authors have already stated that the importance of establishing a strong culture in the organizations [35]. for successful project cannot be overemphasized because it makes the contractors, project managers and team members to have total commitment to a project.

Deal & Kennedy [17] suggest that successful project in an organization is determined by strengthening and improving the organization cultural values that are well associated to their chosen strategies. Schein sees organizational culture as the elementary assumptions, values, beliefs and models of behaviour, practices, rituals, heroes, symbols, technology and artefacts. In addition, Hartog & Verburg [38] indicate that organizational culture is a strong tool that is associated with "behaviour and attitude" of construction service suppliers, supervisors of project and members in a team during the execution of any project, and that it significantly influenced construction risks. Hence, the intention of the researchers is to identify how accurate control is being achieved in various organisations, thus adopting organizational control theory and institutional theory.

Organizational internal factors and construction risk management

The intention of the researchers is to make an investigation into the influence of organizational internal factors on the management of construction risk. The management of construction risk, as far as this study is concerned, denotes the effectiveness of the construction companies in handling risk incidence while carrying out construction tasks; the practices may be in form of properly taking charge of the administration, material, fund, strategy or workforce and tools-related risk. Various research in the past have carried out correlational studies on the organizational internal factors (i.e., valuable communication, dynamic leadership, culture within organization) and diverse aspects of managing risk among construction companies (administration, material, funding, and workforce and tool-related risk), but the findings were inconsistent. Kumaraswamy and Chan's [32] findings revealed that the management of construction risk had positive correlation with communication. Furthermore, it was discovered by SS Rajest, et al.,[16] that the management of construction risk among the Indian was seriously affected due to poor

communication. Similarly, Marshall's [43] findings displayed that the management of construction risk among the companies in the UK and efficient communication had no significant correlation. However, the results of Alinaitwe's research [10] revealed that there existed negative connection between the management of construction risk among the Ugandan construction companies' effective communication. In the same vein, other studies [37] confirmed that the unique abilities possessed by different individuals (capacity to execute diverse tasks) and skills (gained expertise on specific job during training) had beneficial influence on the management of construction risk. Therefore, the importance of skills and individual capabilities cannot be ignored if effective responses are to be made regarding unexpected occurrences and to successfully complete construction projects by contractors, project managers and team members.

Furthermore, the management of construction risk did not have any significant connection with the competency and skill of team members as reported by Akintoye and MacLeod [2]But Ahmed's et al., [9] study showed that there existed negative correlation between the way construction risk was being managed in Hong Kong and the level of the management's activeness and studies revealed positive influence of the level of the management's activeness with the management of construction risk whereas Ahmed's et al., [9] study confirmed that the level of the management's activeness had negative connection with the management of construction risk among companies in Hong Kong.

Organizational Control Theory (OCT) basically emphasizes that risk occurrence will be reasonably reduced on the construction sites when activities are being properly supervised by the members of a team and the manager in charge of a project. Though this theory still needs to be seriously considered among the popularly adopted theories, the importance of control and responsiveness during construction activities cannot be overlooked in reducing the occurrence of risk on projects. The regulation process is very similar to coercive isomorphism, as discussed by DiMaggio and Powell [43]. Likewise, it is assumed by institutional theory that the introduction of control by regulatory bodies (processes of regulating) has high possibility of reducing the occurrence of risk thereby encouraging compliance.

Coercive pressure as a moderator

Institutional theory pays significant attention to the context. The theory emphasizes that establishing influential procedures require the inclusion of well-established instructions, standards, and schedules for social behaviour. Much of the early studies of institutional theory emphasise that organisations and actors, operating within a specific context, are pressurised to obey the requirements and their institutional controls [43].

They described this phenomenon as recognized isomorphic adjustment, manifesting in three ways:

- Isomorphic coerciveness comes from politically-oriented forces and issues of legitimacy.
- Mimetic isomorphism manifest through response to unexpected events in the standard manner; and
- Normative isomorphism is related to professionalization.

This study adopted coercive pressure as moderator.

The explanation of coercive pressures includes "formal and informal pressures exerted on organizations by other organizations upon which they are dependent" [43]. The source of coercive pressures is from the various authorities of the powerful management. A good example of powerful management is made up of various government agencies that possibly have great control over organisational behaviours. Other establishments upon which an organisation depends (such as governmental agencies, headquarters, and important clients) and the expected societal norms (such as legislation and societal norms on corporate governance, stakeholder management and affirmative action) of the environment where an organisation operates are sources of coercive pressures. He et al., [29] state that isomorphic is founded on the dissimilarities in power arising from the decree, authorized position, or the regulation of required resources. In other words, isomorphism is intensified by power and dependence, improbability, and expertise. In examining the coercive pressure on construction companies' competency, and claims that an indirect means of forcing personnel to improve upon their activities so as to achieve the desired goals concerning the standard management of risk in the construction process consist of providing incentives and making available healthy and safe surroundings for the workers. Furthermore, a more effective means of making organisations to improve on risk management practices is by imposing risk management regulations together with monitoring and explicit penalties for noncompliance. Therefore believes that when performance and standard coercive pressure are properly applied it would positively influence the companies' decision regarding the appropriate actions for construction activities, such as buying of construction materials.

Research hypothesis

H1 There is positive relationship between effective communication and the management of construction risk.
H2 There is positive relationship between organizational culture and the management of construction risk.
H3 There is positive relationship between active leadership and the management of construction risk.
H4 Coercive pressure will positively influence the construction risk management.
H5 Coercive pressure positively moderates the connection that effective communication has with the management of construction risk.

H6 Coercive pressure positively moderates the connection that organizational culture has with the management of construction risk.
H7 Coercive pressure positively moderates the connection that active leadership has with the management of construction risk.

Conceptual framework

The conceptual framework gives a description of how the variable relates to each other. However, it consists of independent, dependent, and moderating variables and underpinning theories. Independent variable affects and determines the effect of another variable with the relationship of the moderator. The independent variables in this study are organizational internal factors. The dependent variable is construction risk management. Therefore, the research framework of this study measures the relationship between organizational internal factors and construction risk management with the moderating role of coercive pressure among peninsular Malaysian construction companies, as shown in Figure 1

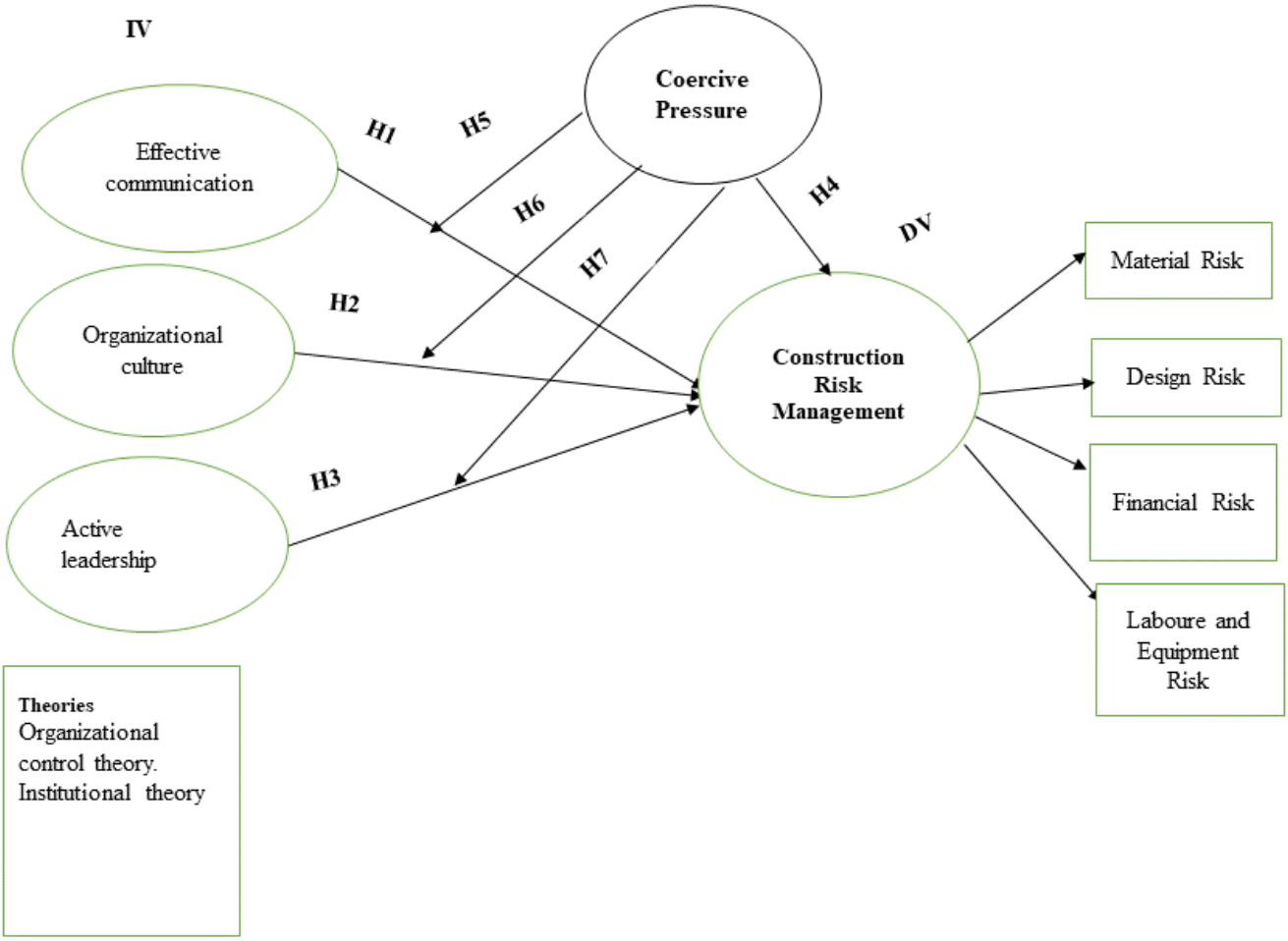

Figure 1. Conceptual framework Methodology Developing measures and scale

The adopted questionnaire for this study was designed base on the review of past published literature. Thereafter, proper adoption, modification and extension of the existing scales were done. Two academics from the Faculty of Industrial Management University Malaysia Pahang and two professionals in the construction industry painstakingly analysed the validity of the content. Then, the incorporation of their inputs and suggestions were added to the instrument's final draft.

Thereafter a trial study was carried out. The construction companies functioning within Peninsular Malaysia were given copies of questionnaire, totalling forty-five (45) copies. The instrument's internal consistency reliability was identified by means of Cronbach's alpha coefficient and a high reliability coefficient which ranged between 0.805 and 0.924 was displayed. Afterwards, final improvement was done on the questionnaire. The study's data were obtained through an eight-page mail and personal administration of the copies of questionnaire examining the following: factors within organization, coercive pressure, and management of construction risk. A Likert scale having the following range was used in gathering of data: "very low, low, medium, high, and very high". The indicators for the variables were properly reflected as they were initiated by their main constructs without altering the latent constructs meaning.

Sample and data collection

The Malaysian construction companies are the main source of this study's data. The main respondents were made up of project managers, executive directors, engineers, marketing managers, and contract managers; they have been chosen because they possessed the required professional involvements in construction activities which qualify them to give accurate responses to the questionnaire items. With the aid of a drawn list consisting 9316 contractors registered and actively operating in Malaysia, as provided by Malaysian Construction Industry Development Board in 2018, the obtained sample size of construction companies was 165 across the eleven states.

The parameter suggested by Krejcie and Morgan's [33] was adopted to determine the suitable sample size for and to establish a confidence level of significance at 95%. The specified least number that is required for a study with a population of 4520 construction firms is 369 construction companies, as stated in the parameters. A stratified sampling technique was employed in choosing the sample size. In other words, the whole population across the Peninsular Malaysia states (eleven in number) was divided into equally exclusive sections as suggested by Sekaran and Bougie [48]. Afterwards, the researcher adopted a proportionate stratified random sampling. In this case, members from each of the sampled section were properly represented (in this case, states in Peninsular Malaysia) and were proportionate to the whole number of elements in the corresponding sections. It was identified by [50] that construction companies in Malaysia do not usually respond in a large number. In order to prevent such occurrence so as to decrease the

possibility of having sampling error, the total sample size was multiplied by two according to Hair et al., [22] suggestion. Therefore, the researcher sent out 370 copies of the designed questionnaire to the construction companies throughout Peninsular Malaysia states (eleven) [23]. The sent copies of questionnaire and the cover letter explaining the reason and giving assurance of safe treatment of respondents' responses were dispatched by email to the designated firms. Then, more analysis was done using 165 copies which made up a response rate of 44.5 percent and was considered to be adequate for the study. This was suggested by Akintoye [2] and SS Rajest et al., [16] that a range between 20 and 30 percent survey response is adequate for the construction industry [24].

The examination of the differences that may occur in the responses was done based on Pallant's [42] recommendation [26]. The respondents were grouped into two thus: early respondents for responses received within the first 30 days and late respondents for responses after the usual 30 days. The adoption of the benchmark of 30 days was as a result of the decline in the response rate after the first 3-4weeks of data collection [51].

Statistical method

Partial Least Squire Structural Equation Modelling (PLS-SEM) technique was utilised in the analysis of the collected data for both inner and outer models. The intention of this study was to make prediction of the possible modification that the endogenous latent variables can cause while responding to recorded changes in the exogenous latent variables [27]. The adopted method has been well established in the sense that it supported the study's model made up of numerous concepts, path associations and pointers with advanced elements such as the mediator variable and hierarchical components [12].

Measurement model

The process of measuring the model started with assessing the reliability of each item (Table 1). The first-order constructs (dimensions) associated to second-order constructs that are reflective had loadings that were beyond 0.7 thresholds, which is the acceptable measurement. The observation of the composite reliability was done by assessing the construct reliability [48]; [25]. The constructs that are related to all the second order had the required construct reliability which were greater than 0.7 as Ringle et al., [44] suggested (Table 1). Furthermore, as shown in Table 1, the obtained measurements of all the constructs involved the convergent validity since their Average Variance Extracted (AVE) surpassed the 0.5 level as Fornell and Larcker [19] recommended. The determination of the discriminant validity was done by making a comparison of the AVE square root (the diagonal figures in Tables 2 and 3) with the correlations between latent constructs. Generally, there was close relation between each latent construct and their measures than to others and it is shown in figures 2 and 3.

Table 1. Construct validity and reliability

Items	Cronbach's Alpha	CR	(AVE)
AC. L	0.864	0.893	0.515
COR	0.876	0.903	0.573
E.COM	0.805	0.865	0.567
FIN	0.896	0.924	0.708
LAB	0.924	0.939	0.689
MAN	0.909	0.924	0.528
MAT	0.817	0.874	0.584
O.C	0.913	0.933	0.698

Abbreviations: AC. L: active leadership, OC: organizational culture, E.CO: effective communication, C. OR; Coercive pressure, FIN; Financial, LAB; Labour, MAN; Management, MAT; Material.

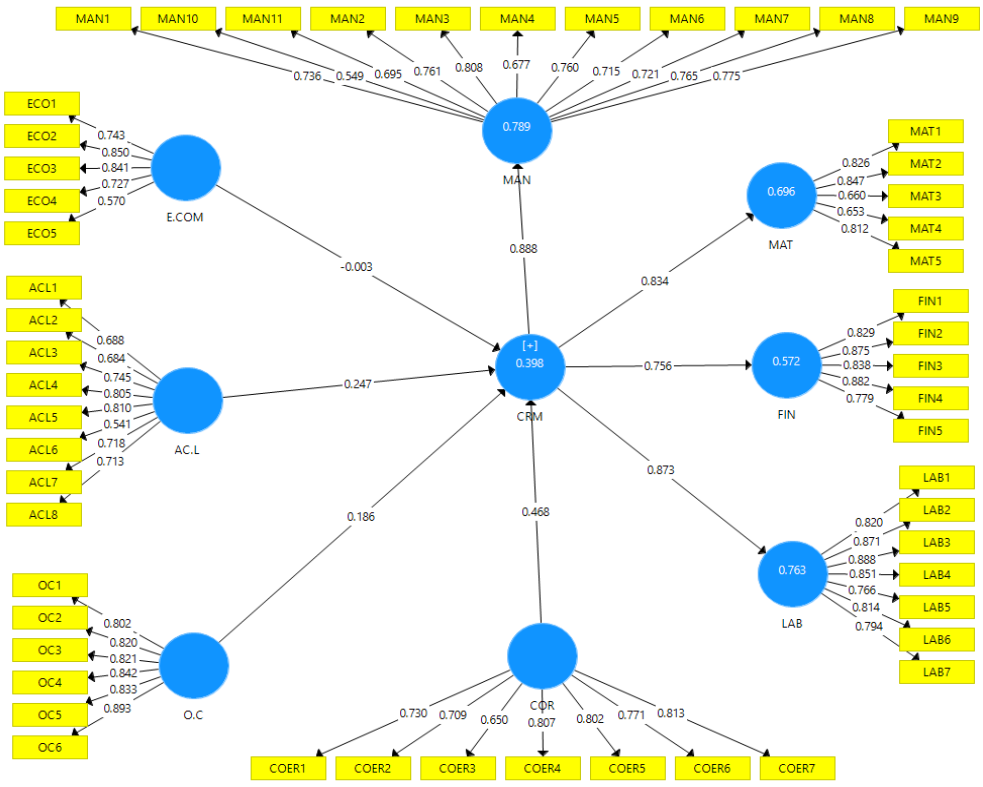

Figure 2. The evaluation of structural model through PLS

Table 2. The results of bootstrapping for structural model evaluation.

Hypothesis	Paths	Beta	SE	T- Value	Decision
H1	E.COM -> CRM	-0.075	0.072	1.174	Not supported
H2	O.C -> CRM	0.143	0.082	2.127	Supported

H3	AC. L -> CRM	0.279	0.097	2.849	Supported
H4	COR -> CRM	0.402	0.064	6.668	Supported
H5	COR*E.CO -> CRM	0.096	0.091	1.145	Not supported
H6	COR*OC -> CRM	-0.014	0.108	0.697	Not supported
H7	COR*ACL -> CRM	0.338	0.127	2.711	Supported

Note: Significant at 0.01 (1-tailed), __significant at 0.05 (1-tailed) and _significant at 0.1 (1-tailed).

Table 3. Descriptive statistic and discriminant validity coefficient based on Fornell–Larcker [19] criterion.

	AC.L	COR	E.COM	FIN	LAB	MAN	MAT	O.C
AC.L	**0.717**							
COR	0.058	**0.757**						
E.COM	0.698	0.094	**0.753**					
FIN	0.241	0.338	0.132	**0.841**				
LAB	0.322	0.43	0.239	0.634	**0.83**			
MAN	0.413	0.391	0.357	0.532	0.627	**0.727**		
MAT	0.341	0.52	0.289	0.496	0.661	0.715	**0.764**	
O.C	0.707	0.041	0.558	0.252	0.284	0.428	0.241	**0.836**

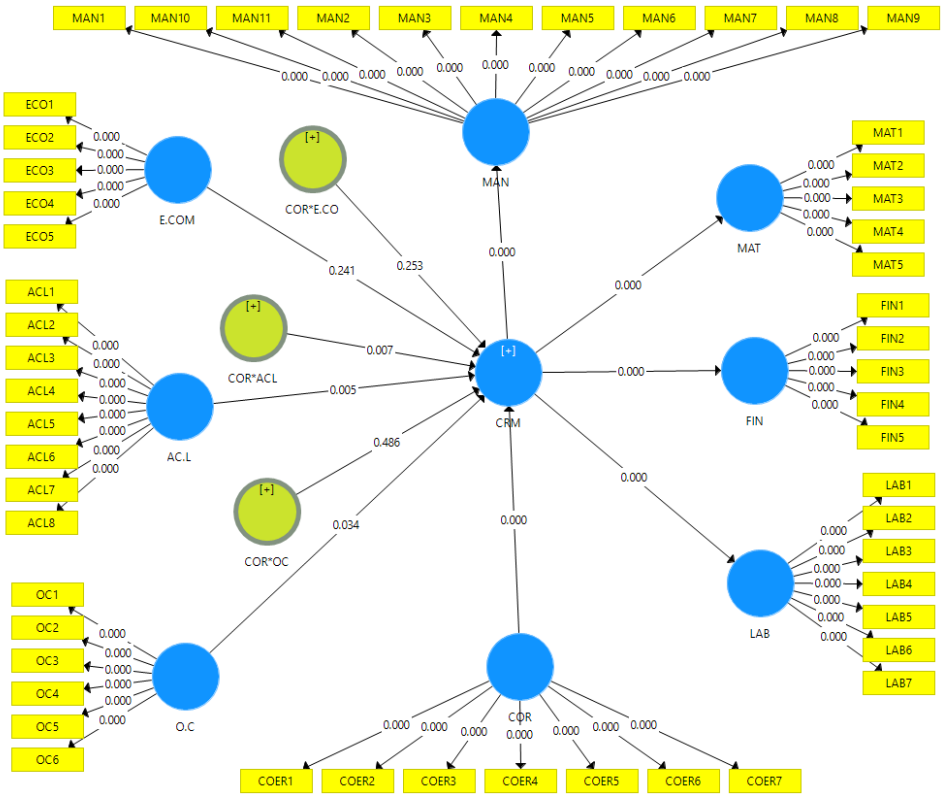

Figure 3. The evaluation of structural model thrrough PLS bootstrapping

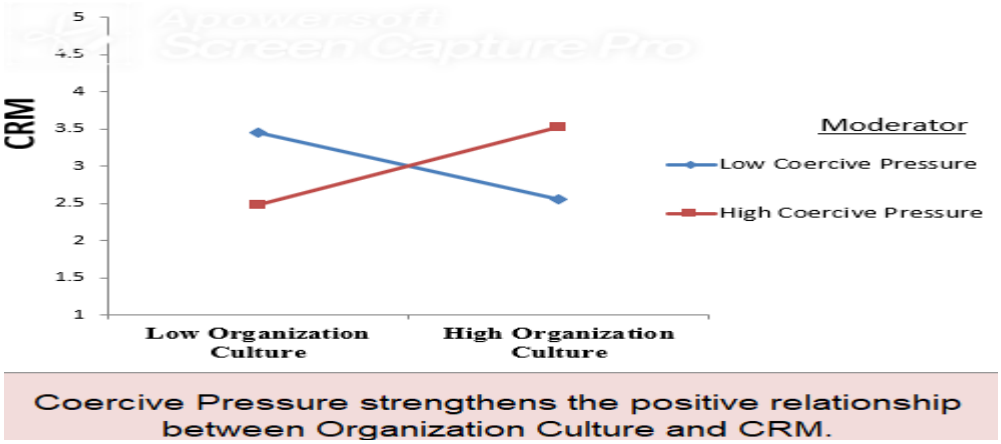

Figure 4. Interaction effect of coercive pressure on organizational culture and construction risk management

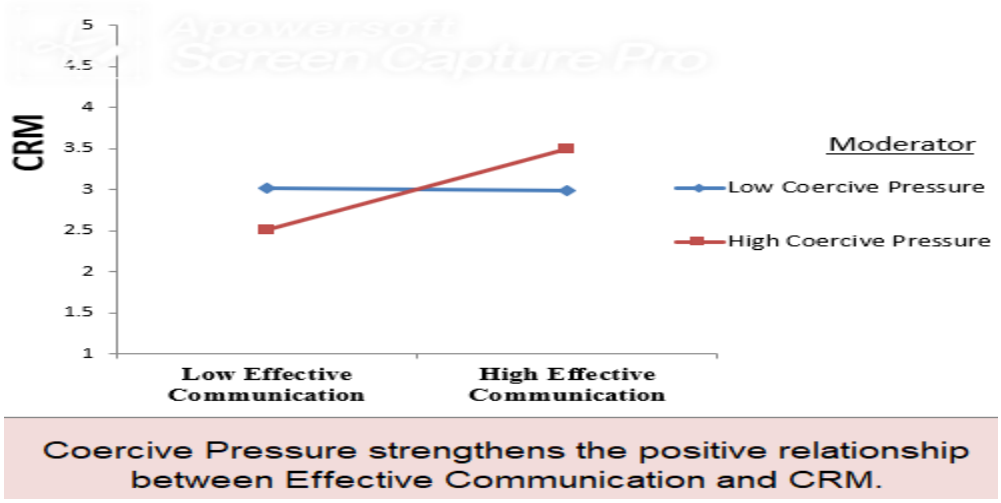

Figure 5. Interaction effect of coercive pressure on effective communication and construction risk management.

After the verification of the significance path coefficients of the actual research model was done, the R^2 values, effect size, and predictive significance aimed at the research model were evaluated. The entire variance for the management of construction risk in this research model was 39%. In other words, the exogenous underlying variables (effective communication, organizational culture and active leadership and coercive pressure), which are four, showed 39% with regard to the variance in the management of construction risk and suggest a value of 0.10 for an R^2 as a minimum satisfactory level. Effect size in table 4:

$$f^2 = \frac{R^2\,included\ - R^2\,excluded}{1-R^2included}$$

Table 4. Effect sizes of the latent variables on Cohen's [14] recommendation Effect size and predictive relevance

R^2	Included	Excluded F^2	Effect size
E.CO 0.398	0.387	0.018	None
AC. L 0.398	0.375	0.038	Small
OC 0.398	0.381	0.028	Small
COR 0.398	0.181	0.360	Large

Abbreviations: AC. L: active leadership, OC: organizational culture, E.CO: effective communication, C. OR; Coercive pressure.

Testing moderating effect of coercive pressure

A product-indicator technique was utilised by the researchers in conducting the test. The observation and assessment of the effect that the moderating variable (coercive pressure) had on the correlation that existed between internal organizational factors and the management of construction risk was done by PLS structural equation modelling. Firstly, the combination of both the exogenous latent variables and the moderating variable was required so as to form the model's independent latent variable in order to evaluate the direct influence. Secondly, there was a need for the latent interaction term to be recognized. This was done through the procreation of each of the indicator products relating to the exogenous latent variables with each moderating variable indicator [45]. Thirdly, the estimation of the standardized path coefficients was required. This was done in order to affirm the significance of the interaction effects in this research model (0.018, 0.038, and 0.028, for effective communication, active leadership, and organizational culture respectively). Finally, there was a need for identifying the moderating effects' strength as proposed by Cohen's [14] effect size formula.

It was predicted by Hypothesis 4 that coercive pressure would have positive influence on the management of construction risk. Finding showed that coercive pressure had positive influence on the management of construction risk (β0.402, t =6.668, and p<0.01). Hypotheses 5 to 7 anticipated that coercive pressure positively regulates the relationship that internal organizational factors (effective communication, organizational culture, and dynamic management) had with the management of construction risk. Findings in Table 1 showed that coercive pressure possessed appositive relationship with only hypothesis 7, dynamic management and management of construction risk (β=0.338, t=2.711and p<0.01). The coercive pressure's mediating influence between specific factors within organisation and management of construction risk was only substantial in H7 as displayed by the bootstrapping. There existed no significance in H5 and H6; nevertheless, the connection that the specific internal organizational factors had with the

management of construction risk was strengthened by the product term method, which further positively strengthened the relationship.

Findings for Hypothesis 1 displayed that efficient communication had a negative correlation with the management of construction risk. The results suggest that despite the application of efficient communication skills, companies still experience great risk while carrying out construction tasks. Also, it was assumed that the culture of organizations would have positive correlation with the management of construction risk (Hypothesis 2). As predicted, the result supported the hypothesis two. The result aligns with that of Moe who stated that various individuals have diverse capabilities (aptitude to do diverse jobs) and expertise (on specific jobs due to training over time) that have productive outcomes in the management of construction risk. This further suggests that possessing the required expertise and capabilities by contractors, mangers of projects and members of a team are instrumental to effective response to unexpected occurrence during construction activities and for successful completion of construction projects. Hypothesis 3 anticipated positive relationship between active leadership and the management of construction risk, and results supported the hypothesis (H3). This means that having active leadership in charge could help in the reduction of risk during construction activities.

Hypothesis 4 also predicted that coercive pressure would positively influence the management of construction risk, and results supported the hypothesis (H4). This shows that there would be reduction in risk during construction activities for every construction company that imbibes external pressures such as government rules, regulatory or instructions of other professional agencies in all the processes involved in implementing activities on the construction site, such as taking proper procedures in preparation towards the project and at the conclusion of the project.
It can be recalled that Hypotheses 5 to 7 stated that coercive pressure moderates the connection that factors within organisation have with the management of construction risk among the construction firms in Peninsular Malaysia. But out of the 3 internal organizational factors 2 had negative relationship with coercive pressure and construction risk management while only Hypothesis 7 was directly related with the management of construction risk in a positive manner.

Figures 4 and 5 give strong indication regarding coercive pressure moderating effect on internal organisational factors and construction risk management. As it is shown in the figures above, coercive pressure positively strengthened the connection that factors within organizations had with the management of construction risk in Peninsular Malaysia. There existed a statistical significance for organizations that highly responded and are committed to the mandatory external pressures. It is very clear that when coercive pressure is seriously applied in companies' construction activities, the possibility of having construction risk is low. As soon as coercive pressure and the management of construction risk are on the increase, internal organisational factors and the management of construction risk are significantly connected. In other words, the serious application of coercive pressure while working on the construction sites brings about further beneficial organisational

influence on the management of risk in construction companies. It can be deduced that the coercive pressure is able to facilitate the regulation and control of human activities so as to minimize risk during the construction of project.

Determining the of strength of moderating effect

The calculation of Cohen's [14] effect sizes was done. This was intended to perfectly establish the moderating effect of coercive pressure on the connection that factors within the organization had with the management of construction risk. Likewise, the measurement of the influence of the mediating variable can be done making a link between the determination coefficient (R^2 value) of the actual effect model together with the R^2 values of the full model comprising both the exogenous latent variables with the mediating variable [30]. Thus, the level of the mediating influence was identified by using the formula below [14]; [30].

$$\text{Effect size: } f^2 = \frac{R^2 \, model \, with \, modorator \; - R^2 \, model \, without \, modorator}{1 - R^2 model \, with \, moderator}$$

According to the recommendations of Cohen [14]; Taofeeq et al., [50] and Henseler and Fassett [30] the sizes of the moderating influence $(f^{2)}$ values in Figure 4 (of the influence of coercive pressure interface on factors within organizations and the management of construction risk) are 0.35, 0.15 and 0.02, which are reflected as strong, moderate and weak, respectively. But when considering the suggestion given by Chin et al. [15], effect sizes having values that are low are not indications of insignificant moderating effect.

At times, it is possible for an insignificant interface effect to be significant while in the extreme moderating situations if the resultant b-changes are significant; then, it means that these conditions should not be totally ignored [15]. The output strength regarding the coercive pressure moderating effects is summarized in Table 5.

Table 5. Strength of the moderating effects following Cohen's [14] and Henseler and Fassett's [30] guidelines

Endogenous latent variables	R^2		F^2	Effect size
	Included	Excluded		
Coercive pressure	0.518	0.167	0.167	Medium

Discussion

The aim of this research is to examine whether coercive pressure has a moderating influence on the connections that internal organizational factors have with construction risk management. This study's findings have revealed theoretical and practical implications. The findings have shown that positive relationship exists between the internal organisational factors (effective communication, organizational culture, and active leadership) and coercive pressure in predicting construction risk management.

The first research objective is to affirm if effective communication has negative relationship with the management of construction risk. This means that though companies apply effective communication, they still record high risk during their construction activities. Furthermore, it was hypothesized that team competency and skills would have positive connection with construction risk management (Hypothesis 2), and the hypothesis was supported. The results corroborate with Moe and Pathranarakul's [37] findings that diverse capacities (aptitude to do diverse jobs) and expertise (acquired knowledge on specific jobs through training) are being possessed by different individuals and they are instrumental to the various successes achieved on the management of construction risk. In other words, individual's capacities and expertise are instrumental to effective response to occurrences on the construction sites and for successful completion of projects. Therefore, it is very necessary for contractors, managers of projects and members of a team to possess these qualities in abundance. Hypothesis 3 anticipated that the culture of an organization would have positive correlation with the management of construction risk. The findings depicted that organizational culture relate negatively to construction risk management. Hypothesis 4 was also expected to indicate that active leadership has a positive correlation with the management of construction risk, and the results supported the hypothesis (H4). This suggests that less risk would be experienced by companies having active leadership in charge of the activities on the construction sites.

Also, Hypothesis 5 anticipated that coercive pressure would positively influence the management of construction risk, and the hypothesis was supported (H5). This suggests that every construction company that imbibes external pressures, such as government rules, regulatory or other instructions from professional agencies, by ensuring that all aspects of construction activities are religiously followed before the start and closure of a project, will experience less or no risk incidence while carrying out project on construction sites.

Hypotheses 6 to 7 stated that coercive pressure will moderate the connection that internal organisational factors have with construction risk management among the construction companies operating in Peninsular Malaysia. Out of the 3 internal organizational factors affecting construction risk management, 2 had a negative connection with coercive pressure and

construction risk management; only Hypothesis 7 had a direct positive connection with construction risk management.

Research implications

Generally, this study's findings have both theoretical and practical implications. Theoretical implication given by this study is that it has given more insight regarding the operations within an organisation [18]. For example, efficient communication skills, culture of an organisation and the dynamism of leadership have high possibility of improving the behaviour of the workforce in any organisation. In addition, apart from concentration on the aforementioned variables alone, the theory has been applied or extended into the field of engineering, especially regarding the management of construction risk.

Also, coercive pressure's role as a moderating variable has been established with regard to the connection that exists among efficient communication, culture of organization, dynamic management, and management of construction risk. There have been inconsistencies regarding numerous empirical findings about the connections among efficient communication, the aptitude together with skills of team members, the culture of an organization, dynamic management, and the management of construction risk [9]; [10] thus indicating a theoretical gap in literature. The gap has been filled by this study through the inclusion of coercive pressure which is a moderating variable with the intention of clarifying the debate regarding the effect that efficient communication and dynamic management have on the management of construction risk.

In conclusion, findings from this study have established that coercive pressures are very important strategies that can be used to achieve an organisation's desired goals. This means that any construction organisation that desires to reduce risk occurrence while carrying out construction activities have to make use of coercive force that will push those who do not want to be committed to start acting in favour of the company. A good way of accomplishing this is for managers of project to always give different forms of appreciations to the workforce while carrying out construction activities. Apart from the important contribution of how risk can be managed which has been unveiled to the academic world, more importantly the stakeholders such as contractors, managers of projects and engineers who are currently operating in the various construction companies have been made aware of how risk can be practically managed while carrying out their various construction tasks. For the expected rules and regulation required for the control of risk on construction sites to be strictly adhered to, the registration of all construction companies in Malaysia should be done under CIDB and other interrelated legislations. The proper management of construction risk should be encouraged among the construction companies so as to make the most of their goals and profits.

Limitation of the study

There is need for further replication of this study in other places so that the finding can have wider validity. Despite the insight provided by this study about the influence of coercive pressure on the connection that organizational structure and the management of construction risk management have, there are still some limitations. First, the cross-sectional design adopted has made it impossible to make absolute conclusion because of the studied population. Thus, father study can adopt a longitudinal design so as to discover any form of developments over time. Secondly, there is need for a wider coverage of places within Peninsular Malaysia and the sample size should be increased in future studies. Furthermore, apart from accepting the usual total variance in construction risk management of the endogenous variable (39%), this variance can be improved upon. Nevertheless, the relevance of coercive pressure on the connection between factors within organisations and the management of risk has been made known.

Conclusion

From the available numerous studies regarding the management of construction risk, there has been a dearth of research relating to how coercive pressure influences the correlation between the factors within organisations and the management of construction risk. For this reason, the understanding of some factors within construction companies has been limited. Therefore, it is the aim of this study to make enquiry into how internal organizational factors affect the management of risk, and then identify the role that coercive pressure plays in moderating the connection between the two variables (internal organizational factors and risk management). This study therefore focuses on internal factors within construction companies, risk management in construction companies and the mediating role of coercive pressure in the same construction companies.

The objectives of the study were accomplished through the use of quantitative approach, and the collection of data was done within a stipulated period, making it a cross-section study. Persons such as G7 contractors, project managers, and engineers working in Peninsular Malaysia construction companies were the study's unit of analysis, and the analytical technique was PLS-SEM, using the software Smart PLS 3.2.8. Evidence from this current study has established that coercive pressure has a very high possibility of improving the connection between internal organizational factors (effective communication, active leadership, and organizational culture) and the management of construction projects. That is to say, the management of risk will be easily facilitated in companies where coercive pressure is applied.

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