DOES MODERATING EFFECT OF GOVERNMENT LAWS AND REGULATIONS ON THE RELATIONSHIP BETWEEN CONTACTORS ATTRIBUTE AND DELAY OF ROAD CONSTRUCTIONS IN OMAN?

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Abstract - The present study aims to justify the effects of in case of moderating effect of government laws and regulations on the relationship between Contactors attribute and delay of road constructions in Oman. A quantitative study is adopted with survey data collected from owners, contractors, consultants, and stakeholders involved in road construction projects. The data was collected through the field survey method in the selected area. The simple random sample methodology was used to select samples of respondents. Descriptive statistics are employed to ascertain the trends in the data collected and then structural equation modelling is utilized to see the trends of hypotheses confirmation or rejection. The summarized results of the structural equation model were found to be satisfactory. The result indicates that most of the predictions are correct because the R2 was found to be 0.77 and adjusted R2 was also estimated, this was found to be quite acceptable at about 0.75. The results exhibit a high coefficient of predicting power at 77 percent which was to be 0.000 level of significance measuring the goodness of fit of the model. The R^2 value indicates that the status of delay in road construction in Oman could be explained by all the independent variables in the model. The study result summarized and revealed that Contactor Attribute's is one of the most influencing factors that caused and effects the significant level of the delay in Road Construction Delay (RCDs) in the construction industry in Oman. Thus, the present study has given the following recommendations to overcome of above problems by increasing detailed site investigations, ensuring careful monitoring and regular meetings, effective site management, collaborative working, and effective coordination, proper and comprehensive planning, and scheduling, and ensuring full and intensive commitment from all parties related road construction industries in Oman as well as GCC countries.

Keywords - Project Attribute's, Road Constructions Delay, Oman

I. INTRODUCTION

The Road construction industry confront too many problems in whole Oman such as no proper contract management, claims and dispute among owners, consultant and contractor which in result increase in estimated cost of the projects which creates more issues such as strain relationship among them they don't trust each other and go into litigations or arbitration against each other which result in delays of such important projects(Al-Zaabi & Al-Zadjali, 2022; Bierman, O'Donnell, Burke, McCormick, & Lindsay, 2014; Desruelles et al., 2016; Koepke, Feig, Berndt, & Neave, 2021; Stanger, 1985; Taha et al., 2004). Study find out that time delay occurs more once construction firms are more experience and working for many years. Recent study is more focused upon current situation of Oman construction industry of roads very important factors which effects roads project due to lake of coordination among owner, contractor, consultant, labor, material and supplier's tools and equipment (Courtney-Hatcher, Tee, Hamilton, & Barton, 2013; Emam et al., 2015; Emam et al., 2014; Jarkas & Younes, 2014; Maqsoom, Choudhry, Umer, & Mehmood, 2019; Mohsin, 2012).

The causes related to delays in road construction is very important to have explore on the critical success factors on the delay in road construction projects in the different countries. The consultant related issues which effects delays of projects are improper site investigations, delayed inspections insufficient project management assurances lack of experience lack of communication between consultant vs design engineer. Similarly, contractor related factors also contribute towards delay in road construction and factors are delay of payments inadequate planning and scheduling lack of experience of contractors poor site inspections by supervisor's incompetent project team in appropriate constructions procedures old technology poor communication all these factors causes delays (Alkass, Mazerolle, & Harris, 1996; A. S. Alnuaimi & M. Mohsin, 2013; A. S. Alnuaimi & M. A. A. Mohsin, 2013). The study also explored and summarized the design related factors which cause delay in road construction are inadequate data collection, design errors, mistakes and delays in producing design documents poor usage of advance software, complexity of design, unclear and inadequate details in design drawing. Workforce related factors are also cause delays such as low productivity unqualified and lack of experience low motivation and absenteeism labor transportation issues personal conflicts among them similarly material related issues are also effect completion of road construction projects such as lack of dependable supplier poor quality of material and hike in prices of material late delivery of material construction material shortage and poor procurement

of construction material and damage of construction material (Alnuaimi, Taha, Al Mohsin, & Al-Harthi, 2009; Alzebdeh, Bashir, & Al Siyabi, 2015). Similarly, equipment related road construction delays are mainly insufficient modern equipment and lack of knowledge of modern equipment usage low efficiency of equipment shortage of equipment slow transportation of equipment frequent equipment breakdowns and equipment allocation issues (A. S. Alnuaimi & M. Mohsin, 2013).

In the same fashion, financial allocations and approval, managerial skills, shortage of skill and non-skill labor are main reasons of road construction in Saudi Arabia. (Albogamy et al., 2012; Emam et al., 2014; Mahamid, 2013a, 2016; Mahdi & Soliman, 2018). There are financial difficulties, managerial problem, and poor of skill labors or unqualified labors are also significant main issues of construction delay in UAE (Abdelhadi et al., 2019; Emam et al., 2014; Faridi & El-Sayegh, 2006; Motaleb & Kishk, 2010, 2013). Moreover, poor of experience, settlement of financial issues, design error, process of bidding selection is considered the main delay issues in Iraq (Bekr, 2015). Especially in Oman studied identified poor of experience, shortage of fund, materials at the site are in Oman (Alamri et al., 2017; A. S. Alnuaimi & M. Mohsin, 2013; A. S. Alnuaimi & M. A. A. Mohsin, 2013; Bierman et al., 2014; Mohsin, 2012). There are numerous issues and challenges are facing for road constructions industries in all over the countries (Alamri, Amoudi, & Njie, 2017; A. S. Alnuaimi & M. Mohsin, 2013; Alnuaimi et al., 2009; Mohsin, 2012). Moreover, there are still debilitating on the issues of delay of road constructions are affecting separately on the clients, contractors, and consultants each other. There is still debate to summarized influential caused and its effects on the road constructions industries. Thus, empirical findings concluded that there are different types of reasons of delay found in the road construction projects regardless of different countries, regions, and periods around world. Therefore, the present study taken initiatives to evaluate in case of moderating effect of government laws and regulations on the relationship between Contactors attribute and delay of road constructions in Oman.

II. LITERARURE REVIEW

Alnuaimi et al. (2009) confirmed that the client's extra works and alterations to configuration were the main variables causing change orders, trailed by the no availability of road design and construction manuals and methodology. The main activity observed by laying out guideline reports for plan techniques and building a public data set with regards to soil conditions and administrations (A. S. Alnuaimi & M. Mohsin, 2013; Alnuaimi et al., 2009) . Atout (2016) summed up that the road design and construction projects in Middle East presents specific circumstances in which the advisor of the undertaking needs to focus during each period of plan to guarantee that it will be achieved on schedule. For instance, the unreasonable of venture span, unfamiliar specialists, the remarkable highlights of compositional subtleties in the plan of tasks, and worldwide expert foundations, firms and office. The result of the review is arranged in light of the planned surveys and meetings led with numerous experts and creators expected to distinguish the reasons for deferred projects in Middle East locale from the perspective of the originators. The necessary preventive activities of the planners are contemplated to stay away from any effects on the progression of the venture. The review researches different elements from the client side, contract worker side and the delegated project chief side as it may influence the specialist performance on the job (Atout, 2016).

A. Aziz & Abdel-Hakam (2016) examined outcomes that uncover great connection of causes and groups among contract workers and site/plan engineers, among specialists and site configuration engineers and a to some degree among's project workers and advisory consultants. So there are no main drivers that are underestimating to be most or least viable postponement causes. Proposed model for foreseeing road design and construction project span was created. A genuine contextual analysis tried the exactness of proposed model. As indicated by the investigation of contextual analysis, the most contributing causes and groups to delays were examined, and a few future proposals were proposed to control and limit delays in road design and construction projects. These discoveries were useful for project directors to relieve the road design and construction delays in Egypt. To successfully conquer the road design and construction delays in emerging nations, ideas are made for principal and large-scale changes in acquisition frameworks and partners' administration (R. F. Aziz & A. A. Abdel-Hakam, 2016).

Pourrostam & Ismail (2012) recognized 10 most reasons for delay were: (1) delay in progress installment by client, (2) change orders by client during road design and construction, (3) inefficient site managing, (4) gradualness in dynamic cycle by client, (5) monetary troubles by contract workers, (6) late in assessing and endorsing configuration records by client, (7) issues with subcontract workers, (8) ineffectual preparation and planning of undertaking by contract worker, (9) missteps and inconsistencies in plan reports, and (10) awful climate. Six significant impacts of deferral were: (1) time underestimation, (2) cost underestimation, (3) altercations, (4) all out relinquishment (5) mediation, and (6) suit. The paper predicts a few future patterns and recommends specific regions in which future exploration on road design and construction activities ought to be engaged (Pourrostam & Ismail, 2012).

III. METHODOLOGY

The current study used the quantitative research design. The aim of this research is to examine the effect of the government regulations, departmental integrations of works and local authorization moderate relationship between the attributes of critical success factors and constructions delay of the road projects in Oman. The collected data of the study will be analyzed descriptive statistics such as frequency distributions, percentages and averages. Inferential statistics like regression analysis will be performed, while standard deviation will be computed to test for consistency and the variability of responses across the study. As the present study aims to justified the relationship of the moderating effect of government laws and regulations on the relationship of the road construction attributes and delay of road constructions in Oman. The present study used structural equation model by the used of PLS path model analysis. The study used SmartPLS software to analysis of Result of PLS algorithm calculation with independent variables, dependent variable, relationship among variables, and all indicators of variables. In PLS-SEM, the values are organized according to their indicator's individual reliability (Hair Jr, Sarstedt, Hopkins, & Kuppelwieser, 2014). The values range from 0 to 1, where a higher value indicates higher reliability level. Values of composite reliability/Cronbach alpha between 0.60 to 0.70 are acceptable, while in many cases stage the value can be higher than 0.70 (Hair Jr et al., 2014). The present study employed SPSS software for descriptive statistics which used to describe the basic features of the data in a study through providing simple summaries about the sample and the measures. module, specially used for Structural Equation Modeling, path analysis, and confirmatory factor analysis. It is also known as analysis of covariance or causal modeling software. Smart PLS is a software for variance-based structural equation modeling (SEM) supported with graphical user interface using partial least squares (PLS) path modeling.

IV. FINDINGS

As the present study aims to justified the relationship of the moderating effect of government laws and regulations on the relationship of the road construction attributes and delay of road constructions in Oman. The table: 4.11 and 4.12 distribute the Relevance and Significance of Path Co-efficient of the model of the study, the overall estimated result of structural equation model analysis is satisfactory. This result is based on the cross-section primary data where the adjusted R^2 is The summarized results of the structural equation model were found to be satisfactory. The result indicates that most of the predictions are correct because of the R2 was found to be 0.77 and adjusted R2 was also estimated, this was found to be quite acceptable at about 0.75. Based on the model's performance shown in Table 6.16 the model exhibits a high coefficient of predicting power at 77 percent which was to be 0.000 level of significant measuring the goodness of fit of the model. The R^2 value indicates that the status of delay of road constructions in Oman could be explained by all the independent variables in the model.

In the same way, in case of Contactor Attributes study shown that the β coefficient at 0.285 whereas the critical t values are at 3.544 and 0.000 of P values respectively. The result of the study indicated that Contactor Attributes has positive and significant effects on Road Construction Delay (RCDs) in the construction industry in Oman. Moreover, in case of moderating effect of government laws and regulations on the relationship between Contactors attribute and delay of road constructions in Oman scored of β coefficient at 0.49 whereas the critical t values are at 2.82 and 0.00 of P values respectively. The result of the study indicated that government laws and regulations on the relationship between Contactors attribute and delay of road constructions in Oman has significant positively moderating effects respectively. The justification of the relationship of higher Govt and Law RIs has significant positive affects the relationship between Contractor RIs and Construction Delays. It can be said that the higher the Govt and Law RIs, the stronger influence on the relationship between Contractor RIs and Construction Delays.

V. CONCLUSION

As the present study aims to justified the relationship of the moderating effect of government laws and regulations on the relationship of the road construction attributes and delay of road constructions in Oman. The table: 4.11 and 4.12 distribute the Relevance and Significance of Path Co-efficient of the model of the study, the overall estimated result of structural equation model analysis is satisfactory. This result is based on the cross-section primary data where the adjusted R^2 is The summarized results of the structural equation model were found to be satisfactory. The result indicates that most of the predictions are correct because of the R2 was found to be 0.77 and adjusted R2 was also estimated, this was found to be quite acceptable at about 0.75. Based on the model's performance shown in Table 6.16 the model exhibits a high coefficient of predicting power at 77 percent which was to be 0.000 level of significant measuring the goodness of fit of the model. In the same way, in case of Contactor Attributes study shown that the β coefficient at 0.285 whereas the critical t values are at 3.544 and 0.000 of P values respectively. The result of the study indicated that Contactor Attributes has positive and significant effects on Road Construction Delay (RCDs) in the construction industry in Oman. Moreover, in case of moderating effect of government

laws and regulations on the relationship between Contactors attribute and delay of road constructions in Oman scored of β coefficient at 0.49 whereas the critical t values are at 2.82 and 0.00 of P values respectively. The result of the study indicated that government laws and regulations on the relationship between Contactors attribute and delay of road constructions in Oman has significant positively moderating effects respectively. The justification of the relationship of higher Govt. and Law RIs has significant positive affects the relationship between Contractor RIs and Construction Delays. It can be said that the higher the Govt and Law RIs, the stronger influence on the relationship between Contractor RIs and Construction Delays. Finally, the present study has given the following recommendations to overcome of above problems by increasing detailed site investigations, ensuring careful monitoring and regular meetings, effective site management, collaborative working, and effective coordination, proper and comprehensive planning, and scheduling, and ensuring full and intensive commitment from all parties related road construction industries in Oman as well as GCC countries.

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