

An analysis of factors for increase in financial turnover gap between construction companies established during same time period in KSA

Ashraf Ali Mahboob Ali Shah

Salford Business School

University of Salford, Manchester, United Kingdom

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ABSTRACT: *The purpose of this research is to explore the various management related factors influencing the construction companies of Saudi Arabia and try to determine if the corporate management team or the site management team has a significant effect on the overall performance and success of construction companies. The study has made use of quantitative research methods with deduction approach. This research is conducted by using web-based survey questionnaire targeted at the sample size of 400 professionals from all regions of Saudi Arabia including all demographic levels. As per the results, highest RII scorings of the success/failure factors related to the corporate management (Payments delay, Poor cost estimation, Weakness of the financial and technical capabilities of some contractors and Delays in decision making by management team) revealed the importance of corporate management issues for the survival of Saudi Arabian construction companies. The result analyses also revealed that the success/failure factors related to project management team were less supported by participants with the exception being the factor of 'poor project management'. The results obtained from the research would provide insight to companies for better identification of issues that may be facing the organisation and therefore, helpful in formation of policies that may benefit the organisation. This is the first research which covers all of five major grading areas: Roads, Water and sanitation work, Buildings, Electrical work, and Mechanical work with grade I,II, III & IV classified contractors including all thirteen provinces of Saudi Arabia. The literature review revealed that none of previous research cover aforementioned grading areas and demography.*

KEYWORDS: Construction companies, corporate management, site management, Success/failure factors, financial performance,

INTRODUCTION

During the last few decades, the Kingdom of Saudi Arabia (KSA) has experienced a rapid growth in development due to its investment of multi-billion dollars in the Oil & Gas sector as well as due to its need to develop the country 's infrastructure. This led to huge increment in construction projects (Sarhan et al. 2017), resulting in the establishment and growth of numerous construction companies in the KSA. There has been a boom in the Saudi Arabian

_____ Publication of the European Centre for Research Training and Development-UK construction industry from the period of 1975 to 1983 and from 2007 to 2008 due to increased revenues generated from oil and gas industries (Assaf et al., 2010). The KSA's construction industry is further expected to grow as residential, commercial and governmental demands rise in the future; this is due to the annual population increase and the industry will also expand due to the expected implementation of the National Industrial Clusters Program and the development of economic cities (Bahidrah & Korkmaz, 2017).

According to Alsaedi et al. (2019) In Saudi Arabia, it is mandatory for each contractor to obtain a classification certificate. The Saudi Arabian contractor classification system is classified into five grade levels and within 29 fields. According to Ministry of Municipal and Rural Affairs (MMRA), the contractors' classification is an indicator to determine their ability and competence in line with their own potential such as financial, technical, administrative, and executive (MMRA, 2021). The following table displays brief details about five major categories under Saudi Arabia's contractors' classification system:

Table 01 – Saudi Arabian contractors' classification

| Sr. No | Grading Area | Highest financial value for a single project in Millions of Saudi riyal (SAR) | | | | |
|--------|---------------------------|---|----------|-----------|----------|---------|
| | | Grade I | Grade II | Grade III | Grade IV | Grade V |
| 1 | Roads | More than 300 | 300 | 100 | 30 | 10 |
| 2 | Water and sanitation work | More than 300 | 300 | 100 | 30 | 10 |
| 3 | Buildings | Over 200 | 200 | 50 | 15 | 5 |
| 4 | Electrical work | Over 200 | 200 | 50 | 15 | 5 |
| 5 | Mechanical work | Over 200 | 200 | 50 | 15 | 5 |

(Source: <https://contractors.momra.gov.sa/contractorslistpage1.aspx>)

With reference to the above table, under the grading area of Roads and Water and sanitation work, the Grade I contractors are allowed to bid projects with a value of More than 300 million of Saudi riyal (SAR) whereas Grade II above 100 million but up to 300 million, Grade III above 30 million but up to 100 million, Grade IV above 10 million but up to 30 million and Grade V less than 10 million of SAR. Under the grading area of Buildings, Electrical work, Mechanical work, the Grade I contractors are allowed to bid projects with a value of over 200 million whereas Grade II above 50 million but up to 200 million, Grade III above 15 million but up to 50 million, Grade IV above 5 million but up to 15 million and Grade V less than 5 million.

Table 02 – Statistics of classified contractors as per geographical regions

| 2004 | | | | | | | |
|---|-------------------------|----------------|-----------------|------------------|-----------------|----------------|--------------|
| | Regions | Grade I | Grade II | Grade III | Grade IV | Grade V | Total |
| Number of classified contractors in all fields according to regions as of 2004 | Riyadh region | 42 | 58 | 73 | 412 | 239 | 824 |
| | Mecca region | 6 | 17 | 28 | 96 | 60 | 207 |
| | Medina region | 0 | 1 | 2 | 23 | 16 | 42 |
| | Eastern Province | 9 | 10 | 24 | 82 | 73 | 64 |
| | Qassim region | 2 | 5 | 7 | 38 | 12 | 198 |
| | Asir region | 0 | 0 | 5 | 43 | 31 | 79 |
| | Tabuk region | 0 | 0 | 0 | 0 | 0 | 0 |
| | Hail region | 0 | 1 | 0 | 11 | 4 | 16 |
| | Northern Borders Region | 0 | 0 | 0 | 3 | 0 | 3 |
| | Jizan region | 0 | 1 | 3 | 10 | 3 | 17 |
| | Najran region | 0 | 0 | 1 | 16 | 38 | 55 |
| | Al-Baha Region | 0 | 0 | 0 | 4 | 6 | 10 |
| | Al-Jawf region | 0 | 0 | 4 | 8 | 2 | 14 |
| | Outside kingdom | | | | | | |
| | Total | | 59 | 93 | 147 | 746 | 484 |
| 2018 | | | | | | | |
| Number of classified contractors in all fields according to regions as of 2018 | Riyadh region | 87 | 78 | 129 | 300 | 635 | 1,229 |
| | Mecca region | 16 | 27 | 40 | 102 | 311 | 496 |
| | Medina region | 5 | 9 | 7 | 30 | 72 | 123 |
| | Eastern Province | 18 | 25 | 36 | 68 | 182 | 329 |
| | Qassim region | 1 | 2 | 6 | 33 | 126 | 168 |
| | Asir region | 2 | 8 | 18 | 51 | 159 | 238 |
| | Tabuk region | 0 | 1 | 5 | 9 | 7 | 22 |
| | Hail region | 0 | 2 | 7 | 15 | 27 | 51 |
| | Northern Borders Region | 0 | 0 | 7 | 12 | 24 | 43 |
| | Jizan region | 0 | 1 | 8 | 34 | 69 | 112 |
| | Najran region | 2 | 2 | 10 | 33 | 126 | 173 |
| | Al-Baha Region | 0 | 1 | 0 | 2 | 16 | 19 |
| | Al-Jawf region | 0 | 1 | 1 | 11 | 23 | 36 |
| | Outside kingdom | 1 | 0 | 1 | 0 | 4 | 6 |
| | Total | | 132 | 157 | 275 | 700 | 1,781 |

(Source: <https://old.momra.gov.sa/GeneralServ/statistic.aspx>)

The above table displays the Statistics of classified contractors as per geographical regions. The first part of the table shows statistics up to the year 2004 and second part displays the total number of classified contractors as of 2018. It can therefore be inferred that there is a significant growth in the number of classified contractors and in span of 14 years. The number has almost doubled. With numerous developmental projects, KSA is one of the largest construction industries in the world (Al-Yami & Sanni-Anibire, 2019).The

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construction industry of any country indicates its level of development and prosperity. Starting and establishing a successful construction business involves numerous risks and challenges. Failure in construction business is among the highest failure rates in business (Assaf et al., 2015).

The ultimate objective of every business activity is to attain financial success and a construction project business is no exception. According to Bageis et al. (2019), the principal feature of construction business success is the selection of right project for bid. Traditionally, the success parameters for construction industries are project cost, time, and quality which are related to project site management. However, according to Tripathi & Jha (2017), project success does not necessarily define the success of the construction organization. Projects only partially contribute to the overall success of an organization (Nenni et al., 2014). Many construction companies tend to fail within the first few months of operation and are unable to make any signs of growth or survive due to its competition with well-established large construction companies. According to Abu Bakar et al. (2012) the reason for limitation of growth of small construction firms is linked to their size. On the contrary, as per Assaf et al. (2013), opportunities in the form of projects of different sizes and locations, especially those located in remote areas are available to small contractors as these kinds of projects are deemed uneconomical by medium and large contractors.

Many different factors affect the performance of construction industry as it is complicated and dynamic (Jadid, 2013). According to Mohamed et al. (2006), there are several disputes and problems such as conflicts between project parties, projects cost overrun, and delay in delivering the projects area major factors, whereas a detailed analysis performed by AlSehaimi et al. (2013) on the previous studies conducted in the field of delay in construction in developing countries including Saudi Arabia, revealed the most crucial delay factor to be inefficient project management related factors. However, Al-Emad et al. (2017) mention that the most significant cause resulting in construction disputes amongst the stakeholders in construction industry is payment delay. According to Elawi et al. (2016) delays are a major cause for concern in the Saudi Arabian construction industry. According to Al Hammadi & Nawab (2016) construction delays lead to increase in overall project cost, whereas according to Bin Seddeeq et al. (2019) in Saudi Arabian construction industry cost overrun sometimes occurs because of poor estimation that could be one of the reasons for the gap in the financial turnover in between construction companies.

However, Alsuliman (2019) argued that delays are amongst the inevitable challenges that one may face during the execution of construction projects. According to Falqi (2019) limited research is available for the extent of delay in Saudi Arabian construction industries based on the primary data. Therefore, it is necessary to identify the main factors for the gap in the financial turnover in between Saudi Arabian construction companies in order to overcome this critical problem.

In available studies, success factors have been evaluated at a project level which can be considered as a short-term approach. In order to be competitive in the changing business environment, firms must focus more on corporate success too. Therefore a shift must be made

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from focusing on project success to focusing on corporate success in construction organisations to compete in the dynamic marketplace.

Therefore, the focus of this research paper is to explore the various management related factors influencing the construction companies of Saudi Arabia and try to determine if the corporate management team or the site management team has a significant effect on the overall performance and success of construction companies by forming following hypothesis:

1. Corporate management team related factor of payment delay has a high impact on the success/failure of construction companies
2. Project site management team related factor of poor project management has a high impact on the success/failure of construction companies

LITERATURE REVIEW

Success/Failure factors of construction companies

A literature review relating to studies conducted on issues facing the Saudi Arabian construction industry has been performed and the researcher has attempted to identify all the success/failure factors as listed by previous researchers.

Jadid (2013) explored and analysed the obstacles facing the Saudi Arabian construction companies by using quantitative methodology. The study consisted of 71 Saudi contractors from the construction sector with grading area of building. Data was collected using a bilingual digital survey interactive comprehensive questionnaire. Out of the 74 factors that were studied, managerial cause topped the list with the maximum percentage.

A Research was conducted by Assaf et al. (2013) to identify the factors responsible for the failure of huge number of small-scale companies in construction sector in Saudi Arabia by using quantitative and qualitative research methodology. The research included 43 small contractors. Literature review was conducted, and 16 factors were identified for the failure of small contractors in construction industry. The major factors identified were management incompetence, difficulties in acquiring talented personnel, inefficient accounting systems, absence of strategic business plans and being dependent on a limited customer base.

A research was conducted by Ali et al. (2013) for the identification of key performance indicators for the Saudi Arabian construction companies by using quantitative research methodology. Through literature review they have identified a list of 47 potential performance indicator for measuring the performance of company at corporate level. The result revealed financial success factors (profitability, growth, financial stability and cash flow) as a most important factor and manager competency was ranked 16th place. The survey was conducted by randomly selecting sample of 67 large construction companies in grade I category specialized in building works.

Bageis & Alshehri (2019) investigated major factors responsible for success of Saudi Arabian construction companies by using qualitative research methodology. They conducted a semi-

_____ Publication of the European Centre for Research Training and Development-UK structured interview by using an open-ended questionnaire. The majority of participants agreed that factors such as owner-manager characteristics, financial conditions and business management are important for achieving success. 10 participants were recruited for data collection purpose that belonged to renowned small construction companies with grading area of waste management (water and sanitation work). The data collection method used was primary qualitative. Explanation building process has been used by the study to analyse the qualitative data. Based on the themes formulated according to responses gathered from the participants, thematic analysis including set of analytical processes was used for data interpretation.

Recently, Tuffaha et al. (2020) conducted research to develop a framework for assessing construction contractors' performance in Saudi Arabia by using quantitative research methodology. The use of literature review was made for the identification of key performance indicators (KPIs) that are commonly used. The selected set of KPIs were prioritized by the method of relative importance index (RII) based on feedback received by 53 participants out of 67 sample size with grading area of building with Grade I,II & III classified contractors. These factors were further grouped using principle component analysis (PCA). The findings of their research revealed that the performance group (people, business performance, productivity) ranked highest, followed by satisfaction group (end-user's satisfaction, client's Satisfaction, Profitability) ranking 2nd , actual metrics (cost of construction, time of construction) ranking 3rd , estimated metrics (construction cost & time predictability) ranking 4th , compliance (quality & defects, regulatory compliance, health and safety) ranking 5th .

An analysis of the above literature by Jadid (2013); Assaf et al. (2013) and Bageis & Alshehri (2019) has led the researcher to the conclusion that the studies identify the role of management related factors as most important factor in the success or failure of the Saudi Arabian construction companies. On the contrary, Ali et al. (2013) ranked the financial success factor as a most important factor and managers competency was ranked less important while Tuffaha et al. (2020) ranked performance group (people, business performance, productivity) as highest indicator of Construction Company's success.

However, within the management team, many parties such as corporate management team, project site management team interact and work with each other to manage the construction organization. Therefore, the management body may not be considered as one entity as it would dilute their responsibilities. If all management team members are grouped under one category, it would be difficult to identify who exactly was responsible for each issue. Therefore, it is necessary to identify which aspects of management team is responsible for the issues facing the organization.

The below table summarizes the top five success/failures factors as identified by various researchers in the literature review

Table 03 - Top Five Success/Failures Factors as identified through literature review

| Authors | Top Five Success/Failures Factors | | | | |
|-------------------------------|---|--|---|---|--|
| | 1st | 2nd | 3rd | 4th | 5th |
| Al-Kharashi & Skitmore (2009) | Poor qualification of the contractor's technical staff | Poor site management and supervision by contractor | Contractor experience | Suspension of work by the owner/client | Delay in approving major changes in the scope of work by consultant |
| Albogamy et al. (2013) | Low performance of the lowest bidder contractor | Delays in sub-contractor's work | Poor qualification, skills and experience of the contractor's technical staff | Poor planning and scheduling of the project by the contractor | Delay in progress payments by the owner |
| Alhomidan (2013) | Internal administrative problems | Payments delay | Poor communication between construction parties | Delays in decision making by management team | Incapable Qc inspectors |
| Ikediashi et al. (2014) | Poor risk management | Budget overruns | Poor communication management | Slippage of project schedule | Poor estimation practices |
| Assaf et al. (2015) | Lack of contractor experience in particular business field | War | Poor project management | Poor cost estimation | unavailability of stationed project leader at site |
| Al Hammadi & Nawab (2016) | Slowness of owner decision making process | Delay in contractor's payment by owner | Late in revising and approving design documents by owner | Due to short original contract duration | Delay to furnish and deliver site to contractor by owner |
| Mahamid (2016) | Payments delay | Poor communication among project participants | Poor planning and scheduling | Poor labor productivity | Poor quality site documentation |
| Alhajri & Alshibani (2018) | Poor site management and supervision by contractors | Conflict between the main contractor and subcontractor | Poor planning and scheduling of projects by the contractor | Delays in material or equipment delivery | Delays in Handing Over Construction Site to the Contractor |
| Alsuliman (2019) | Focus on financial analysis and awarding the lowest bidder | Awarding contractors projects beyond their financial and technical potential | Selection of contractors who have other faltering projects | Delay of payments from owner | weakness of the financial and technical capabilities of some contractors |
| Alshehri (2019) | Variations orders issues | Other delay issues | Performance and workmanship issues | unforeseen site conditions | Delay in payments |
| Mathar et al. (2020) | Competency and capability of the contractors' key personnel | PM competency, authority and involvement | Clear communication channels between the owner/PM and the designer, | Commitment of all project participants to the established schedule and budget | Clear communication channels between the owner/ PM and the contractor |

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| | | | | | |
|----------------------|--|--------------|---------------------|--|---|
| Gopang et al. (2020) | Client's decision-making process and changes in control procedures | Design error | Labor skills level, | Design changes by Client or Consultant | Issues regarding permissions/ approvals from other stakeholders |
|----------------------|--|--------------|---------------------|--|---|

Top five success/failure factors are taken from each literature and presented based on their severity level. There are total 60 success/failures factors based on 12 literature reviews. Similar factors are highlighted by same colour. It is found that out of 60 success/failure factors, around 34 success/failure factors are common among the literature and 26 success/failure factors are having different views. The most common factors are as follows: delay in payments supported by 6 literature, poor qualification, competency and capability of the contractors' key personnel, poor communication among project participants, poor planning and scheduling and poor labour productivity each supported by 3 literature. The Management of any organization is its backbone and therefore it is imperative to have an efficient and competent management that may prevent the occurrence of huge losses to the company. According to Dikmen et al. (2010), one can examine the value chain of a construction company at corporate and project site level, the site management of the company also plays a significant role in reducing the overall cost. As detailed in literature review, the respondents of most researches conducted were mainly contractors, business owners, clients, and consultants. Therefore, the research mainly reflects their point of view lacking the feedback from employees. Therefore, in next section various success/failure factors are listed for the identification of a range of factors related to management that influence the construction companies of Saudi Arabia and try to determine if the corporate management team or the site management team has greater contribution on the overall performance, growth, and success of construction companies.

Based on above literature review, it can be concluded that the role of management related factors is identified as most important factor in the success or failure of the Saudi Arabian construction companies. The literature review also revealed that none of previous research cover all of five major grading areas: Roads, Water and sanitation work, Buildings, Electrical work, and Mechanical work with grade I, II, III & IV classified contractors including all thirteen provinces of Saudi Arabia. Studies of Jadid (2013), Albogamy et al. (2013) and Al Hammadi & Nawab (2016) covered only grading area of building, Assaf et al. (2013) mostly grading area of building and Ali et al. (2013) grading area of building with Grade I and Tuffaha et al. (2020) grading area of building with Grade I,II & III only. The research of Bageis & Alshehri (2019) concentrated on small construction companies with grading area of water and sanitation work. Study conducted by Mathar et al. (2020) covered only Grade I classified contractors and the study of Assaf et al. (2015) was performed on Grade I classified contractors but limited to industrial petrochemical projects. Study of Mahamid (2016) covered only grade II and Al-Kharashi & Skitmore (2009) study covered only grade III classified contractors whereas Alshehri (2019) study included only Grade I, II, and III & IV.

Research performed by Alhomidan (2013) was done on contractors classified with grading area of Road and study of Ikediashi et al. (2014) included infrastructure works, whereas study of Gopang et al. (2020) covered railway infrastructure construction works which mostly

Publication of the European Centre for Research Training and Development-UK comes under grading area of Road. The work of Alsuliman, (2019) covered public construction projects and whereas the research of Alhajri & Alshibani (2018) was done on petrochemical projects. During in depth review of literature and analysis performed in table 03 to evaluate Success/Failure factors related to corporate management and project site management respectively, it was observed that the factor of 'delay in payments' was found to be the most significant factor among researchers under corporate management but except Mahamid (2016) most of the researchers have not ranked it as the highest success/failure factor, whereas under project site management no consensus among researchers was found.

Therefore, in pursuit of answering the research question “**What are the main corporate and project site management factors responsible for the increase in financial turnover gap between construction companies established during same time period in Kingdom of Saudi Arabia?**”, the researcher felt the need for conducting studies that would cover all of five major grading areas : Roads, Water and sanitation work, Buildings, Electrical work, and Mechanical work with grade I,II,III & IV classified contractors including all thirteen provinces of Saudi Arabia with feedback from contractors, business owners, clients, and consultants as well as employees.

Success/Failure factors related to corporate management

Based on above literature review 36 relevant success/failure factors were identified (18 related to corporate management and 18 related to project site management) to test the following research hypotheses:

- Corporate management team related factor of payment delay has a high impact on the success/failure of construction companies
- Project site management team related factor of poor project management has a high impact on the success/failure of construction companies

Table 04 - Success/Failure factors related to corporate management & Project site management

| Sr. No | Success/Failure factors related to corporate management | Success/Failure factors related to project site management |
|---------------|---|---|
| 1 | Lack of contractor experience in particular business field | Competency and capability of the contractors' key personnel |
| 2 | Suspension of work by the owner/client | Poor project management |
| 3 | Delay in approving major changes in the scope of work by consultant | Poor communication between construction parties |
| 4 | Delays in decision making by management team | Delays in sub-contractor's work |
| 5 | Payments delay | Poor risk management |
| 6 | Low performance of the lowest bidder contractor | Poor labor productivity |
| 7 | Internal administrative problems | Poor site management and supervision by contractors |
| 8 | Budget overruns | Variations orders issues |
| 9 | Client's decision-making process and changes in control procedures | Design error |

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| | | |
|----|--|---|
| 10 | Awarding contractors projects beyond their financial and technical potential | PM competency, authority, and involvement |
| 11 | Selection of contractors who have other faltering projects | Poor planning and scheduling |
| 12 | Design changes by Client or Consultant | Unforeseen site conditions |
| 13 | Poor cost estimation | Commitment of all project participants to the established schedule and budget |
| 14 | Due to short original contract duration | Slippage of project schedule |
| 15 | Delays in material or equipment delivery | Poor quality site documentation |
| 16 | Weakness of the financial and technical capabilities of some contractors | Incapable Qc inspectors |
| 17 | Clear communication channels between the owner/ PM and the contractor | Delays in Handing Over Construction Site to the Contractor |
| 18 | Issues regarding permissions/ approvals from other stakeholders | Conflict between the main contractor and subcontractor |

RESEARCH METHODOLOGY**Study Population and Sample Size:**

This study includes the viewpoint of contractors/ business owners/ employees of Saudi Arabian construction companies in Grade I, Grade II and Grade III category with grading area of Roads, Water and sanitation work, Buildings, Electrical work and Mechanical work only as classified by Ministry of Municipal and Rural Affairs (MMRA). According to MMRA's Statistics of classified contractors, there were total 329 classified contractors in above mentioned categories. The details have been summarized in the below table.

Statistics of classified contractors as per grading area**Table 05 – Statistics of classified contractors as per grading area**

| Sr No | Grading Area | 2018 | | | | | Total |
|--------------|---------------------------|------------|------------|------------|------------|--------------|--------------|
| | | Grade I | Grade II | Grade III | Grade IV | Grade V | |
| 1 | Roads | 12 | 14 | 31 | 94 | 168 | 319 |
| 2 | Water and sanitation work | 12 | 26 | 32 | 98 | 193 | 361 |
| 3 | Buildings | 19 | 35 | 78 | 147 | 202 | 481 |
| 4 | Electrical work | 12 | 11 | 20 | 109 | 245 | 397 |
| 5 | Mechanical work | 8 | 7 | 12 | 39 | 199 | 265 |
| 6 | Other Grading areas | 69 | 64 | 102 | 213 | 774 | 1,222 |
| Total | | 132 | 157 | 275 | 700 | 1,781 | 3,045 |

Note: Total 609 were classified in more than one field

(Source: <https://old.momra.gov.sa/GeneralServ/statistic.aspx>)

The above table 05, displays the Statistics of classified contractors by considering grading area as classified by MMRA as per the latest published open data. Out of the total 3,045

Publication of the European Centre for Research Training and Development-UK contractors, 564 contractors belong to Grade I, Grade II and Grade III category. From these 564 contractors, 235 belong to 'other grading area'. The remaining number of 329 contractors belong to grading area of Roads, Water and sanitation work, Buildings, Electrical work, and Mechanical work. As discussed in previous section, none of researchers have covered complete population size of Grade I, Grade II and Grade III with grading area of Roads, Water and sanitation work, Buildings, Electrical work and Mechanical work MMRA classified contractors in the Saudi Arabian construction industry. Therefore, in order to represent the 329 Targeted population size, this study targets above 329 samples from all the 13 regions of Saudi Arabia. Saunders et al. (2019) agree with the view that a sample exactly representing the target population from which it is taken is ideally the perfect representative sample.

RESEARCH METHODOLOGY

This research shall use epistemological with positivist philosophy because it allows the researcher to use scientific method with observable and measurable facts. The study has made use of quantitative research methods with deduction approach to analyse the factors that contribute to the success/failure of construction companies. The rationale behind the use of quantitative research methodology is to reduce the study bias and to cover the targeted population as far as possible. Quantitative studies assist in gathering measures of data that are reliable (Johnson & Turner, 2003) and are therefore, suitable for this study. Since a qualitative research is preferred in relatively new topics consisting of unknown variables as per (Fellows & Liu, 2015).

The present research is conducted by using web-based survey questionnaire targeted at the sample size of 400 professionals from all regions of Saudi Arabia including all demographic levels. Hair et al. (2020) acknowledges that samples that are selected appropriately give sufficiently accurate information for the use of decision-making purposes in business. This research also includes the female construction professional, as detailed in Literature review section none of previous researchers have included female participants.

According to Saudi Woman Report (2020) by General Authority for Statistics, Saudi women represent almost half of Saudi society around 49 %. As per the Ministry of Human Resources and Social Development, the Saudi female engineers make 6% in the Saudi Arabian construction industry (Saudi Gazette, 2020). The participants have been selected to include 50 % corporate management and 50% other project site management related employees to reflect an unbiased view that would include the point of view of top management as well as site employees. For the Data Analysis, SPSS software is used to find Cronbach's alpha ($C\alpha$) for the testing of the reliability of data and Chi square to test whether two variables are independent or associated. Relative importance index, severity index, frequency index, importance index and frequency adjusted importance index type descriptive statistical analysis methods are used to analyse the data.

RESULTS AND ANALYSIS

Demographic profiles

| | | | | | | | |
|---|---------------------------------|------------------|--------------|--|---------------------------------|------------------|----------|
| Participants' Age profile | Age | Frequency | % | Participants' Educational qualification | Education | Frequency | % |
| | 18 - 25 years | 27 | 6.8% | | Diploma | 12 | 3.0% |
| | 26 - 40 years | 232 | 58.0% | | Bachelor | 265 | 66.3% |
| | 41 - 55 years | 105 | 26.3% | | Master | 120 | 30.0% |
| | 55 years or older | 36 | 9.0% | | Phd/Doctorate | 3 | 0.8% |
| Total | 400 | 100% | Total | 400 | 100% | | |
| Participants' Total years of work experience | Years of work experience | Frequency | % | Participants' Years of work experience in KSA | Years of work experience | Frequency | % |
| | 1- 5 years | 61 | 15.3% | | 1- 5 years | 102 | 25.5% |
| | 5 - 10 years | 84 | 21.0% | | 5 - 10 years | 125 | 31.3% |
| | 10 - 15 years | 85 | 21.3% | | 10 - 15 years | 105 | 26.3% |
| | 15 - 20 years | 81 | 20.3% | | 15 - 20 years | 30 | 7.5% |
| | Above 20 years | 89 | 22.3% | | Above 20 years | 38 | 9.5% |
| Total | 400 | 100% | Total | 400 | 100% | | |
| Participants' Gender | Gender | Frequency | % | Participants' Profession | Profession | Frequency | % |
| | Male | 370 | 92.5% | | Engineer/Supervisor | 198 | 49.5% |
| | Female | 30 | 7.5% | | Manager | 147 | 36.8% |
| | | | | | Project Director | 24 | 6.0% |
| | | | | | GM/CEO/MD | 24 | 6.0% |
| Total | 400 | 100% | Total | 400 | 100% | | |

Figure 1 –Demographic profiles of survey participants

Based on the result of the demographic profiles of survey respondents (Figure 1), it was revealed that the majority (84% i.e. 337/400) of survey respondents belonged to middle age group (26 -55 years) and around 97% were holding a high level of educational qualification (bachelors, master's degree and PhD holders). The survey included 8% female participants, with 64% senior-level (above 10 years of experience) of experienced professionals including 75% professional with more than 5 years of Saudi Arabian construction industry experience by almost equal representation of corporate management (Managers, Project director, GM/CEO/MD and Business owner) as well as project site management

Reliability Statistics

(Engineer/Supervisor) strongly validate the research that the participants were fully mature to understand the subject matter to answer the research question.

In order to identify if the participant's views are influenced by their backgrounds (i.e. corporate management team or project site management team) and also to confirm if the data taken represents the sample population, the non-parametric Chi-square test was conducted to test the objectivity.

The distribution of the participants' background is measured through this test in their response to the question about the success/failure factors responsible for the increase in financial turnover gap for construction companies to examine if their backgrounds have an impact on them by forming following null hypothesis, H_0 - participant's views are influenced by their backgrounds. According to Chi-square calculation by considering $\alpha = 0.05$, $\chi^2_{\alpha df} = 49.2 * 0.05 * 16 = 39.36$, in this case $\chi^2 > \chi^2_{\alpha df}$, Therefore, null hypothesis (H_0 - participant's views are influenced by their backgrounds) is rejected.

Reliability statistics

The data collected was analysed in a reliable manner being consistent with the collection method and data type. The survey results for the 36 success/failure factors related to corporate as well as project site management is grouped by factor ID. Out of 14,400 responses (400 participants multiplied by 36 factors with one selection by each), the combined response frequency of disagree and strongly disagree are very low (8.48%) which indicate the strong validity of factors.

After the collection of raw data gathered from survey responses, it was analysed using statistical methods. Within quantitative analysis, software such as excel are used for drawing diagrams and calculations. Although, there are many computer packages are available for data analysis (Al-Sudairi, 2007) but advanced software such as Statistical Analysis System (SAS), Stata, Statistical Package for the Social Sciences (SPSS) is used for more advanced statistical analysis and data management (Saunders et al., 2019).

A Cronbach alpha α test was performed by using SPSS software on all the responses to check the reliability of data and internal consistency within the responses and to determine whether various groups of participants had different viewpoints about success/failure factors related to corporate management team as well as project site management team. A greater value of α denotes greater internal consistency or stronger inter-criteria correlations and vice versa, the value of α ranging from 0 to 1

The below table displays the SPSS test result obtained for Cronbach alpha α :

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| Group | Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|------------------|--|------------|
| Combination of both corporate management and project site management | .922 | .922 | 36 |
| Success/Failure factors related to corporate management for the testing of Hypothesis 01 | .837 | .839 | 18 |
| Success/Failure factors related to project site management for the testing of Hypothesis 02 | .896 | .896 | 18 |

Table 06- Reliability Statistics

The above table 06, displays the reliability statistics obtained for Cronbach alpha α obtained by SPSS software. The Cronbach alpha α for a combination of all 36 factors related with corporate management and project site management was .922 which is acceptable. The value obtained when the 18 factors related to corporate management and project site management were tested separately was found to be .837 and .896 respectively. According to Doloi, H. (2009) and Almahmoud & Doloi (2020) Cronbach alpha $\alpha > 0.7$ is acceptable. Therefore, the Cronbach alpha value of the survey obtained, being greater than 0.7 indicated a high internal consistency and reliability of the survey deeming it valid for further statistical analysis.

Testing of Hypotheses

In order to verify to what extent a proposed hypothesis can be accepted, the process of hypothesis testing is performed. The survey data including responses of success/failure factors were re-grouped as per their respective hypothesis to perform the analysis so that the answer for this research question could be obtained based on result of analysis. As advised by Mathar et al. (2020) by considering only a limited set of factors, an accurate assessment of factors leading to success is undermined, therefore to achieve the aim of this research top five factors influencing the construction companies of Saudi Arabia as listed in below table are further evaluated to determine their level of impact on the overall performance and success of construction companies.

Summary of top five success/failure factors

Table 07 – Summary of top five success/failure factors

| Sr. No | ID | Success/Failure factors related to corporate management group | Success/Failure factors related to project site management group | Author | Group ranking | Overall Ranking | RII Score |
|--------|----|---|--|--|---------------|-----------------|-----------|
| 1 | C5 | Payments delay | | Albogamy et al. (2013), Alhomidan (2013), Al Hammadi & Nawab (2016), Mahamid (2016), Alsuliman (2019), Alshehri (2019) | CR1 | R1 | 84.95 |

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| | | | | | | | | |
|---|---------|---|-------------------------|--|-----|----|-------|--|
| 2 | C 13 | Poor cost estimation | | Ikediashi et al. (2014), Assaf et al. (2015) | CR2 | R2 | 83.30 | The above table 07, displays descriptive |
| 3 | S 2 | | Poor project management | Assaf et al. (2015) | PR1 | R3 | 83.10 | |
| 4 | C 6 | Low performance of the lowest bidder contractor | | Albogamy et al. (2013), Alsuliman (2019) | CR3 | R4 | 82.50 | |
| 5 | C 4 | Delays in decision making by management team | | Al-Kharashi & Skitmore (2009), Al Hammadi & Nawab (2016) | CR4 | R5 | 82.15 | |
| | | | | | | | | |

tive statistics analysis of survey results of top five factors by utilizing Relative importance index (RII), Severity index (SI), Frequency index (FI), Importance index (IM) and frequency adjusted importance index (FAII) type descriptive statistics analysis methods. The factors are ranked in descending order with respect to their RII scores. Out of 36 success/failure factors, the factor of 'Payment delay' was ranked highest which falls under corporate management group whereas 'Poor project management' secured 3rd ranking in overall factors while within project site management group it ranked 1st. In terms of lowest ranking, 'Incapable QC inspectors' was ranked lowest which falls under project site management group whereas 'Due to short original contract duration' was ranked lowest within corporate management group.

The factor of payment delay by securing 1st rank, tested the first hypothesis of Corporate management team related factor of 'payment delay', whereas the factor of 'poor project management' by securing 1st rank within project site management group, tested the second hypothesis which were formed to answer the research question of this study as detailed in the Introduction section.

Timeline analysis of results: After in-depth analysis of top five identified success/failure factors in order to achieve the objective of this research, the author has performed timeline analysis to integrate it within current environment so that the results obtained from the research would provide insight to companies for better identification of issues that may be facing the organisation and therefore, helpful in formation of policies that may benefit the organisation.

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| Sr. No | Factor ID | Success/Failure factors related to corporate management group | Success/Failure factors related to project site management group | Group ranking | Overall Ranking | Timeline of previous researches | | | | | | | | | | | | | | | | |
|--------|-----------|---|--|---------------|-----------------|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|--|--|--|--|--|
| | | | | | | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | | | | | |
| 1 | C5 | Payments delay | | CR1 | R1 | | | | | | | | | | | | | | | | | |
| 2 | C13 | Poor cost estimation | | CR2 | R2 | | | | | | | | | | | | | | | | | |
| 3 | S2 | | Poor project management | PR1 | R3 | | | | | | | | | | | | | | | | | |
| 4 | C6 | Low performance of the lowest bidder contractor | | CR3 | R4 | | | | | | | | | | | | | | | | | |
| 5 | C4 | Delays in decision making by management team | | CR4 | R5 | | | | | | | | | | | | | | | | | |

Figure 2 -Timeline analysis of results

Figure 2 displays the timeline analysis of results obtained under this research. The top five identified success/failure factors have been plotted on timescale as per their respective research years. It is noticed that respondents show their agreement with factors which were identified by researchers from period of 2009 to 2019. Surprisingly, none of factors from year of 2020 identified by Mathar et al. (2020) & Gopang et al. (2020) were ranked within top five. However, two factors identified in year of 2019 by Alsuliman (2019) and Alshehri (2019) not only secured their ranking within top five but also one of the factors, 'payment delay' ranked highest. Therefore, Author decided to investigate the issues by revisiting the result analysis before moving to conclusion so that it could be fully adopted for further recommendation to Saudi Arabian construction companies.

RESEARCH FINDINGS

The research findings identified that out of top five factors, the four success/failure factors were related to corporate management and only one was related to project site management which draw conclusion towards the significance of corporate management team. In order to integrate the identified success/failure factors with current business environment, the timeline analysis of factors was performed:

Ranking comparison in between RII and frequency of survey responses on combined Likert scale

Table 08 – Ranking comparison in between RII & combined Likert scale developed by Author

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| Sr No | Factor ID | Success/Failure factors related to corporate management group | Success/Failure factors related to project site management group | Based on RII,SI,FI,IM and FAI | | Based on combined Likert scale of Strongly Agree and Agree | |
|----------|-----------|--|--|-------------------------------|-----------------|--|-----------------|
| | | | | Group ranking | Overall Ranking | Group ranking | Overall Ranking |
| 1 | C13 | Poor cost estimation | | CR2 | R2 | CR1 | R1 |
| 2 | C5 | Payments delay | | CR1 | R1 | CR2 | R2 |
| 3 | C16 | Weakness of the financial and technical capabilities of some contractors | | CR5 | R6 | CR3 | R3 |
| 4 | S2 | | Poor project management | PR1 | R3 | PR1 | R4 |
| 5 | C4 | Delays in decision making by management team | | CR4 | R5 | CR4 | R5 |

Which revealed that none of factors from year of 2020 secured their ranking within top five and therefore upon noticing the exclusion of factors, when author revisited the result analysis section he noticed respondent's slightly low agreement level in support of 'payment delay factor than poor cost estimation factor. Whereas, according to descriptive statistics analysis of results ranked in descending order with respect to their RII scores, the factor of payment delay secured 1st rank. Therefore, Author decided to re do the analysis of the factors based on frequency of Survey responses on combined Likert scale. The comparisons result revealed that the factor of Poor cost estimation secured 1st rank due to high agreement level than factor of payment delay. Whereas, Spearman's rank correlation ranking comparison in between RII & combined Likert scale yielded with 96% of agreement level. However, the factor of payment delays has less disagreement level than factor of poor cost estimation. Therefore, payment delay should be considered most significant delay factor than poor cost estimation.

CONCLUSIONS AND RECOMMENDATIONS

Conclusion

According to rationale of this research paper various management (project site and corporate) related success/failure factors influencing the Saudi Arabian construction companies have been investigated and evaluated to determine if the corporate management team or the site management team related success/failure factors have a significant effect on the overall performance and success of construction companies and responsible for the increase in financial turnover gap between construction companies established during same time period in KSA. Based on survey result received from 400 professional working in Roads, Water and sanitation work, Buildings, Electrical work, and Mechanical work with grade I,II,III & IV classified construction companies from all thirteen provinces of Saudi Arabia including all demographic levels as well as by considering the highest agreement level, the positive results

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of non-parametric Chi-square test which rejected the possibilities of bias if the participant's views are influenced by their backgrounds deemed it valid for further statistical analysis and Cronbach alpha α being greater than 0.7 indicated a high internal consistency and reliability of the survey. The descriptive statistics analysis of survey results by utilizing RII, SI, FI, IM and FAII methods yielded similar results. Spearman's rank correlation ranking comparison in between RII & combined Likert scale yielded with 96% of agreement level. The factor of 'payment delay' from corporate management group being ranked highest in term of RII scope it tested the first hypothesis of Corporate management team related factor of 'payment delay', whereas the factor of 'poor project management' by securing 1st rank within project site management group it tested the second hypothesis which were formed to answer the research question of this study. According to result analyses as presented in table 07 & table 08, due to the highest RII scorings of the success/failure factors related to the corporate management (Payments delay, Poor cost estimation, Weakness of the financial and technical capabilities of some contractors and Delays in decision making by management team) revealed the importance of corporate management issues for the survival of Saudi Arabian construction companies. Therefore, most significant factors that a firm must consider in order to avoid bankruptcy and reduce possibility of failure are corporate level decision making by company management. Whereas the result analyses also revealed that except factor of 'poor project management' the success/failure factors related to project management team was less supported by participants.

Recommendation

Based on the conclusion of result analysis, under this section recommendation is provided to achieve the objective of this study so that the results obtained from this research shall provide insight to Saudi Arabian construction companies to help them in formation of their company policies that may benefit the organisation to reduce the financial turnover gap between them.

The following are recommendation for top five success/failure factors:

Payments delay: Al-Emad et al. (2017) recommended that contractors should make use of progressive payment options for creating cash flow plans and managing their requirement of financial resource. Therefore, Alshehri (2019) advised the hiring of well qualified cost managers who are able to advice on the judicious allocation of financial resources on the basis of work progress. In order to understand the priority of fund based on technical requirement it is recommended to both owner & contractors to hire competent finance manager with project management certification so that he can properly allocate the fund based on project's technical requirements. Project sponsor should also avoid generating cash flow by wrong procurement strategy not aligned with plan and project requirement to avoid the delay of critical materials required for the projects as per plan. But clients must also fulfil their role of payment obligations to contractors to support the project cash flow so that required resources can be arranged as per plan. However, clients do not hold payment of contractors willingly and in most cases all of dues are released within few months. The research of Shash & Qarra (2018) revealed that the majority (65%) of the Saudi Arabian contractors were in agreement that the approval process for invoiced work was a significant factor in delaying invoicing payments and only 5% of the participating contractors agreed with disputes and budget shortages as being major reasons for delay in payments. In order to

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reduce the impact of payment delay to project, it is recommended to owners to pay at least partial payment on monthly basis to support at least worker's salaries to boost motivation as well as to arrange critical materials. It can be facilitated if actual information regarding project expenditures be presented clearly and in a way that clients can understand (Alotaibi et al. 2015). Additionally, it is recommended that there should be reserved contingency fund not less than 5% of overall project value by equal contribution from client and contractor both to fund the project during critical stage.

Poor cost estimation: the basic cause is lack of strategic partnership and joint ventures with key suppliers and vendors with company's procurement department. The payment delay to suppliers and vendors is major cause behind this. Improper co-ordination and lack of support by not arranging timely quotations from suppliers and vendors during bidding stage also yield up with poor cost estimation by estimation department. In order to avoid poor cost estimation, top management must ensure proper co-ordination in between procurement department and estimation department. As concluded by Assaf et al. (2018), poor design package during bidding stage is forcing contractors to apply unjustified contingency which leads to poor cost estimation, this issue can be resolved by hiring competent estimation engineers with design engineering backgrounds.

Weakness of the financial and technical capabilities of some contractors: the basic cause of this issue is policies and strategies formulated by incompetent finance manager including corporate technical management team. However, sometimes it is due to interference of business owners. Although the contractor selection in Saudi Arabia is a challenge for clients (Price & Al-Otaibi, 2010), but technically qualified contractors must be selected by clients to enhance project performance and cost. According to Assaf et al. (2019) before awarding of contracts, clients should consider contractor's capabilities as well as their financial situation and sources and it should not solely be on the financial proposal submitted by contractors. Small contractors should initially target short and mid-form contracts to reduce financial turnover gap due to weakness of the financial and technical capabilities. Additionally, it is recommended to adopt Joint venture & collaboration strategies with contractors having strong financial and technical capabilities to participate in mega projects.

Poor project management: In order to overcome this issue, contractor should hire well qualified and competent corporate departmental managers including HR team to avoid the hiring of incompetent project management team in each department. According to Assaf & Al-Hejji (2006) by utilizing expertise and knowledge of contractors' trained workforces, delays in projects can be prevented. In order to reduce cost most of the construction companies used to promote some of their existing engineers to managerial positions which pose serious risk to project and lead to poor project management due to lack of project management skills. Therefore, it is recommended that top management must carefully evaluate engineers' project management skills before recruiting or promoting them as a managerial position or promotion should be conditional by ensuring that the candidate engineer possesses a master's degrees such as MSc, MBA, PMP or equivalent certification which will help them to increase value management. Khawam & Bostain (2019) also have similar recommendation. Additionally, the poor project management practices can be

_____ Publication of the European Centre for Research Training and Development-UK improved by adopting suitable project management methodology such as lean agile project management methodology as it encompasses the entire project life cycle.

Delays in decision making by management team: organizations face this issue where their corporate team members are posted in key positions based on their number of years of services and loyalty within company regardless of their skills and capabilities. However, sometimes delay in decision making by management team may be the natural outcome of the complex negotiation process with clients which can be avoided by arranging negotiation related short trainings and courses for corporate management team members. As discussed in literature review section, the management of any organisation is its backbone, therefore it is imperative to have an efficient and competent management team with good negotiation and decision-making skills that will prevent the incurrence of huge losses to the companies. In addition, Lack of moral orientation of senior leadership could be also one of the prime reasons. This issue can be resolved by arranging necessary training for corporate team members through industry experts training providing consultants.

According to research methodology used in previous literature author noticed that only one research of Assaf et al. (2013) was conducted by use of mix methodology (qualitative & Quantitate) while all latest research was conducted quantitatively and most of them are based on decades old finding. Therefore, for further future research on Saudi Arabian construction companies, it is recommended to conduct more research by use of qualitative research methodology to include the latest issues and challenges being faced by Saudi Arabian construction companies.

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