External Contingency Factors that Affect Contractors' Performance in Developing Countries- A Jordanian Case Study

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Abstract
The performance of construction firms hinges upon the influence of both external environment and firms' specific factors. A less obvious, and possibly a more critical, line of inquiry is that what are the most significant external contingency factors that influence small and medium (SM) sized contractors' performance in developing countries? Using a dataset comprising 409 participants representing the construction stakeholders in Jordan, the factors that attributed to external contingency factors that impact on SM sized local contractors in Jordan were empirically examined. Findings from the analysis of the data show that all of the main groups of external contingency factors are considered as important factors that having impact on the contractors' performance in Jordan. Client performance was found the most significant group of factors, followed by the consultant performance. Regulations, laws, policies, and high taxes were identified as the most external attributes that impact negatively on the contractors performance. The study findings have implications for management practice and the government as it could help managers and decision makers of construction organisations to acknowledge the influence of external environment as sources of performance differences among contractors. The study contributes to current debate on the causes of performance differentials among small and medium size contractors firms in developing countries.

Keywords
Contingency Factors, Contractors, Performance, Stakeholders, Developing Countries, Jordan

1. Introduction

Contractors contribute significantly to construction projects and their performance can affect the overall project success (Hove 2016; Ofori-Kuragu *et al.* 2016; Holt 2010). Since construction projects have become more complex, the need for predicting the factors that affect the contractors' performance becomes more essential (M. R. Lee *et al.* 2014; Sweis *et al.* 2014; Demirci. G *et al.* 2009; Phua 2006;

Dlungwana & Rwelamila 2002; Kumaraswamy 1996). Many researchers investigated the factors influencing the contractors' performance. Most of the studies assume that endogenous internal factors (i.e. contractor's organizational characteristics) such as company resources, capabilities and project management competencies impact on the contractor's overall performance and the success or failure of the project (For example, Chaudhari *et al.* 2015; Gyadu-Asiedu 2014; Sweis *et al.* 2014; Alzahrani & Emsley 2013; Shafie Sidek & Zainol 2011; Zulkiffli & Perera 2011; Sebone. & Barry 2009; Anagnostopoulos & Vavatsikos 2006; Xiao & Proverbs 2003; Alarco´n & Mourgues 2002; Alwi *et al.* 2002; Soetanto & Proverbs 2002; Takim & Akintoye 2002; Adams 1997; Shash & Al-Amir 1997; Assaf *et al.* 1996; Ching Ming & Frank 1996). However, the complexity and adversity of the construction industry aggravate the various risks and uncertainties (i.e. exogenous factors) faced by contractors, which influence their ultimate performance levels (Nieto-Morote & Ruz-Vila 2012). Only few studies discussed those contingency factors that are unavoidable in a project environment (Akanni *et al.* 2014; Sweis *et al.* 2014; Isik. Zeynep *et al.* 2010; Love & Holt 2000).

Underperformance by Jordanian contractors is a major concern amongst stakeholders in the Jordanian construction industry. The failure to meet performance targets in the management of construction projects, delays, cost overruns, high rates of incidents and problems related to environmental issues are common occurrences (Alkilani *et al.* 2013; Alkilani *et al.* 2012b; Alkilani *et al.* 2012a; Sweis *et al.* 2008; Tarawneh 2004; Abbasi & Al-Mharmah 2000; Al-Momani 2000, 1995a; Al-Momani 1995b). In Jordan, the economy depends almost entirely on SMEs to drive its economy, and the construction industry is not exceptional (CBJ 2014; JEDCO 2011). Several factors affect contractors' performance in the Jordanian construction industry. However, a significant knowledge gap exists in the industry pertaining to the external contingency factors that influence the performance of contractors in Jordan (Sweis *et al.* 2014; Alkilani *et al.* 2012b). This paper discusses the results of the participants' view on the most significant external contingency factors (i.e. external factors) that affect the contractor's performance in Jordan.

2. Theoretical Background

Performance measurement is a critical key to performance improvement (PI) (Ofori-Kuragu *et al.* 2016; Beatham *et al.* 2005). Research shows that the dynamic nature of performance and especially PI requires a fully understanding and identifying its determinants, causes and consequences, then making a judgment about whether performance has improved.(Swanson 1999; Torraco 1999; Lebby 1990). Consequently, attempts to identify and explain the sources of performance differences among firms have generated theoretical and empirical arguments in the field of strategic management. Whereas Industrial organization (IO), resource-based views (RBV) and contingency theory remain the most dominant theories in more recent competitive strategy research (Pratono & Mahmood 2014; Roy 2009; Hawawini *et al.* 2003; Ginsberg & Venkatraman 1985). IO and RBV provide contrasting explanations for the source of performance differential, with both seen as being odds with each other (O'Cass & Weerawardena 2010), have traditionally been viewed as competitive regarding the source of sustained competitive advantage (Spanos & Lioukas 2001). Industrial organization researchers oppose that heterogeneity in organizational performance is determined by the forces within the structure of the industry that an organization operates (Porter 1981; Porter 1980). The resources-based view (RBV) theorists, on the other hand, argue that an organization's internal environment is the main driver of its performance and therefore its competitive advantage (Barney 2001; Barney 1991). However, there remains little consensus on the relative role of these two influences on firm performance, and the reason is that a firm's organizational capabilities and market position are fundamentally intertwine (Makhija 2003). Within the ambit of environmental constraints coupled with different organisational contexts and characteristics. Many researchers argued that the most effective organizations are those with structures and systems designed to be consistent with or 'fit' their environment (Donaldson 2008). Consequently, Contingency theory represented a move away from the 'one best way' thinking of classical theories to an 'if-then' approach (Holt 1999; Mintzberg 1981; Child 1975). Donaldson (2001, p. 1) described the contingency theory of organization as "a major theoretical lens used to view organizations." .

The construction industry has faced increasingly dynamic situation that resulting from changing client desires, increasingly harsh regulations, and concerns with quality and environment soundness, and competition among enterprises within the sector and externally with other sectors (Ofori-Kuragu *et al.* 2016; Rahman & Alzubi 2015; Rajablu *et al.* 2015; Cheah *et al.* 2004; Warszawski 1996). The literature shows that the performance of firms depends upon the dynamics of both industry- and organization-specific factors (Akanni *et al.* 2014; Phua 2006). While uncertainties from the industry business environment and the influence of the stakeholders' performance are an inherent part of environment that construction firms have hardly any control on, only few studies discussed those external factors (Xiong *et al.* 2014; Deng & Smyth 2013; Isik. Zeynep *et al.* 2010). Consequently, recently researchers in construction management have started to adopt the contingency- based approach to investigate the effect of the external contingencies on the performance of construction firm (Deng & Smyth 2013). Many factors played a crucial role in this paradigm shift in viewing the performance of construction firms, mainly because of the introduction of multidimensional performance measurement (Beliz Ozorhon *et al.* 2011), and the call for the need for performance measurement system, which is able to assess construction performance and promote performance improvement (Gyadu-Asiedu 2014). In this essence, Hanisch & Andreas (2012) stated that contingency-based approach can provide more detailed verification of the effect on firm performance than the traditional identification of critical success factors.

Deng and Smyth (2013) reviewed the literature of construction firm performance approaches in the empirical research, and contingency theory. They concluded that no research makes it explicit, some methodological issues of applying contingency theory such as hypotheses development, construct validation, and reliability, have not been recorded or discussed explicitly. In this essence, the contingency theory was identified as alternative theory for performance measurement (Çakır 2014; Gyadu-Asiedu 2014; Kaveh Asiaei & Jusoh 2014; Deng & Smyth 2013; Garengo & Umit 2007; Child 1975). Employing the contingency theory, will give a bigger picture to understand the factors that might influence the design and implementation of performance measurement systems. Further, it will help in identifying the factors that influence the overall performance.

The literature shows that most of the research on construction contractors has been designed primarily for use in to large company context (Hudson & Smith 2007; Tenhunen & Rantanen 2001), an obvious void of understanding how small and medium enterprises (SMEs) contractors measuring their performance is concluded in the literature (Rompho 2011; Chong 2008; Hudson *et al.* 2001). SMEs are different from larger firms and so the factors impact on their performance and therefore their success criteria are likely to be different as well (Maqsoom & Charoenngam 2014). Further, few studies designed in the context of developing countries (Akanni *et al.* 2014). The business and project environment in many developing countries present special challenges (Ofori 2012b, 2012a), those challenges place problems and difficulties on the contractors, and therefore on the construction industry improvement. There is therefore, a need to establish research in the context of developing countries and in particular for SMEs contractors.

In the light of the previous discussion, this research adapts an integrating approach of two selected theories to identify the factors that impacts on the contractors' performance in Jordan, namely the contingency theory and the resource-based- view theory. In particular, this paper adapts the contingency theory as a theoretical lens to identify the external contingency factors impact on the contractors' performance in Jordan, while taking into account the challenges faced by SM sized contractors in developing countries. Thus two groups of external contingency factors were identified namely, (i) stakeholders' performance (i.e. client, consultant and supplier), and external attributes that related to the business environment, policies. Regulations, laws, and physical environment (i.e. weather conditions).

2. Research Method

Based on a comprehensive review of literatures on sources of performance difference among firms as applied to the construction industry, project success factors, factors affect the contactors' performance and in particular, those that attributed to SM- sized contractors in developing countries. 35 individual factors were identified, which were then named as external contingency factors that are categorized into two main groups of contingency factors, namely (1) stakeholders' performance factors, and (2) external attributes. To obtain different perspectives of each of the two external contingency factors categories, the views of a variety of Jordanian construction industry's actors were sought using an exploratory questionnaire survey that was written in English language. Most of the questions of the survey were closed-ended questions to acquire accurate and more reliable data from respondents. Five-point Likert scale questions were used in this questionnaire, to rate the level of impact of the presented external factors. Whereas 1 equals very high negative impact and 5 equals very high positive impact. Likert scales are recommended by many researchers in construction management because they allow measuring attitude, and providing a range of responses to a given question or statement (Holt 2014; Jamieson 2004).

A stratified random sampling was used for this research, which allowed dividing the construction stakeholders into various groups (strata), which include client, consultant, contractor, supplier, and academic. It further allowed dividing those groups into sub-strata. A simple random sampling was employed to select a sample from each stratum because it allows selecting the sample without bias (Saunders *et al.* 2012). The sample selected, therefore, can be said to be representative of the whole population.

The survey questionnaire was administrated to the identified sample of construction stakeholders who operate in Amman -the capital of Jordan- as well as in other three main big cities in Jordan (Zarqa, Karak and Irbid) - both electronically via Survey Monkey and in hardcopy. Of the 550 questionnaires distributed, 409 questionnaires were suitable for analysis. The data collected from the survey was analyzed using IBM SPSS 21 statistical package; where the following statistical measures were employed:

- Means of rates of all KPI groups and individual corresponding indicators,
- The relative importance of the KPIs was identified using the Relative Importance Index drawn from Holt (2014) (see eq. (1)). RII values then used to calculate the ranks of factors. This approach used by Enshassi *et al.* (2009). In cases were two or more indicators have the same RII's value, "tied rank" was used as drawn by Kruskal & Wallis (1952). This means average the ranks for the tied values

$$(RII) = \frac{\sum W}{A \times N} \qquad \text{eq. (1)}$$

Where W = the weight given to the response, A= the highest weight (5 in this study), and N= the number of respondents.

(3) Inferential parametric tests to show the significance of participants' groups responses. Those were One-way ANOVA test, when meeting the classical main assumptions (normality, homoscedasticity and independence), and Welch's (1951) test when failing to meet those main assumptions.

3. Participant Profiles

The profiles of respondents are shown in Table 1. The majority of participants are experienced project and construction managers, with other participants representing architects, engineers, and academics. It is worth noting that contractors represented all six grades of contractor registration, where contractors are classified according to a company's registered capital, financial status, and qualifications by the Jordanian Construction Contractors Association (JCCA 2014). In addition, consultants represented all four grade of classification according to the Ministry of Public Works and Housing of Jordan (MPWH 2014).

Table 1: Participants Profile

Stakeholder Groups	**Frequency**	**Percentage**
1-Client (public)	42	10.3
2-Client (private)	29	7.1
3-Consultant	71	17.4
4-Contractor	228	55.7
5-Surveyor	12	2.9
6-Supplier	18	4.4
7-Academic	9	2.2
Position in Organisation/Role	**Frequency**	**Percentage**
Project manager	177	43.3
Construction manager	117	28.6
Architect	32	7.8
Quantity surveyor	18	4.4
Engineer	40	9.8
Owner (client developer/ investor)	16	3.9
Academic	9	2.2
Organizational Size	**Frequency**	**Percentage**
Micro, 1-10 Staff	24	5.9
Small, 11-249 Staff	280	68.5
Medium, 250-500 Staff	49	12
Large, Over 500 staff	56	13.7

4. External Contingency Factors Impact on the Contractors' Performance

As illustrated in Table 2, according to all participants, the client has the most impact on the contractors' performance and the overall project success, which was ranked the first with a mean of 4.1 and RII= 0.82, followed by the consultant influence, which ranked the second with mean of rate of 4.0 and RII= 0.80. External attributes influence was ranked the third with a mean of (3.92) and RII= 0.78. Supplier's impact ranked the last with mean of (3.80) and RII= 0.76. All participants reported that regular payments from the client (RII=0.93) is the most critical factor that impact on the contractor's performance and the overall project success. On the other hand, the data shows that all KPIs for consultant were regarded as highly important (all had RII > 0.75). Further, the results show that external attributes pertained to regulations, polices and laws and material prices fluctuation were the most significant external attributes impact on the contractors' performance in Jordan. All the participants reported number of product's defects is the most important supplier's factor that influences the contractor performance and the overall project success. The parametric analysis revealed that there was an agreement on significance of the stakeholders' attributes (i.e. client, consultant and supplier), and external attributes that affect the contractor's performance and the overall project success with p> 0.05 in both of One- Way ANOVA and Welch- tests (See Table 2).

Table 2: Means, RIIs, and Parametric Tests Results

External Contingency Factors Impact on the Contractors Performance	Overall (All Participants			Four Groups of Participants				One-Way ANOVA		Welch-test
	Mean	RII	Rank	Public Client	Private Client	Cons.	Cont.	F	Sig <0.05	Sig <0.05
Client	**4.10**	**0.82**	**1**	**3.83**	**4.0**	**4.10**	**4.25**	**2.15**	**0.089**	**0.560**
Regular payments	4.63	0.93	1.5	4.62	4.60	4.66	4.67	0.22	0.884	0.894
Effectiveness of product design	4.11	0.82	1.5	4.29	4.21	4.18	4.11	1.16	0.324	0.213
Change orders	3.70	0.74	3	3.79	3.79	3.52	3.80	2.26	0.081	0.090
Quality and commitments from client employees	3.60	0.72	4.5	3.5	3.55	3.5	3.7	1.86	0.136	0.131
Financial stability and investment opportunity	3.52	0.70	4.5	3.52	3.83	3.51	3.56	1.49	0.218	0.159
Management effort and communication	3.32	0.66	4	3.48	3.41	3.33	3.34	1.00	0.390	0.332
Consultant	**4**	**0.80**	**2**	**4.17**	**4.1**	**4.20**	**4.33**	**2.50**	**0.057**	**0.580**
Quality of design and documents	4.56	0.91	1.5	4.53	4.50	4.58	4.56	0.299	0.826	0.834
Technical and management competences	4.46	0.89	1.5	4.53	4.66	4.40	4.50	2.142	0.095	0.095
Ability to meet programmed milestones	4.40	0.88	1.5	4.50	4.31	4.40	4.40	0.844	0.44	0.530
Timely allocation of resources to critical activities	4.31	0.86	4	4.40	4.45	4.37	4.27	1.03	0.38	0.282
Provision of design documentation and specification prior to construction	4.24	0.85	5.5	4.48	4.44	4.34	4.40	2.393	0.068	0.055
Effective performance of duties as per terms and conditions of appointment	4.24	0.85	8.5	4.24	4.52	4.31	4.30	1.715	0.164	0.098
Proper communication	4.23	0.85	7	4.31	4.17	4.24	4.20	1.247	0.293	0.381
Consultant ability to determine project feasibility during early project phases	4.22	0.84	8.5	4.35	4.48	4.32	4.40	1.872	0.134	0.118
Effective site supervision and inspection	4.10	0.82	10	4.57	4.21	4.40	4.20	12.37	0.198	0.262
Good and corporate working relationships	3.88	0.78	5.5	3.83	4.00	3.85	3.90	0.226	0.878	0.865
Supplier	**3.80**	**0.76**	**4**	**3.37**	**3.45**	**3.86**	**3.93**	**2.581**	**0.180**	**0.51**
Number of product defects	4.72	0.94	7	4.60	4.83	4.70	4.75	2.581	0.053	0.74
Replacement value	4.60	0.92	1	4.53	4.60	4.51	4.94	1.399	0.243	0.249
Delivery time	4.48	0.90	4.5	4.40	4.52	4.56	4.50	0.778	0.507	0.486
Quality assurance of products	4.41	0.82	9	4.48	4.3	4.38	4.41	0.727	0.537	0.535
Level of service	4.31	0.86	2	4.40	4.55	4.32	4.30	2.142	0.095	0.71
Quality control system	4.17	0.83	4.5	4.21	4.34	4.13	4.21	0.752	0.522	0.448
Use of latest technology	4.15	0.83	8	4.21	4.55	4.23	4.22	1.644	0.179	0.112
Product life span	4.10	0.82	3	4.00	4.21	4.00	4.10	1.166	0.323	0.303
External Attributes	**3.92**	**0.78**	**3**	**3.82**	**3.81**	**3.82**	**4.38**	**2.423**	**0.169**	**0.53**
Regulations, policies and laws	4.10	0.80	1.5	4.26	4.17	4.00	4.20	2.616	0.051	0.023
Material Price Fluctuation and material modification specification	4.00	0.80	1.5	3.88	4.10	4.00	4.15	1.730	0.160	0.181
Financial consideration (Governmental Support)	3.70	0.74	3	3.33	3.34	3.33	3.50	1.345	0.260	0.282
Business environment (bureaucracy)	3.53	0.71	4	3.72	4.00	3.91	4.13	1.600	0.189	0.236
High taxes rates	3.50	0.70	5	3.26	3.48	3.52	3.64	1.850	0.138	0.092
Severe weather conditions	3.41	0.68	6	3.33	3.38	3.24	3.56	2.193	0.089	0.015

5. Discussion

Among the important stakeholders' factors, the client's performance was ranked the first. This agrees with the findings of Soetanto and Xiao & Proverbs (2003), Alarco´n and Mourgues (2002), and Ahmad *et al.* (2011) pointing out that the client performance is regarded as having the highest impact on the contractor's performance. The significant characteristics of client performance that influence the contractor's project performance in Jordan were also found as client attributes that influence the project performance in previous research. (For Example: Sweis *et al.* 2014; Ahmad *et al.* 2011; Tan & Ghazali 2011; Enshassi *et al.* 2006; Alarco´n & Mourgues 2002; Soetanto & Proverbs 2002). Regular payments by the clients ranked the first important factor that affects the contactors' performance. This can be explained by the fact that Jordanian construction contractors are independent, small, with limited resources, have little access to credit, and depend mainly on the client payments to deliver their projects. In Jordan, the majority of construction projects are funded by the owner who pays the contractor periodically, who in turn pays the subcontractors, the suppliers and other parties of the project for services rendered. A portion of the periodic payments is normally held by the owner as retain. The success of this routine depends on the financial strength of the owner as well as of the contractor. Therefore, any delay in payments by the client, or when the project funds are mismanaged, would affect the contractor's performance in executing high project performance. Further, the contractors in Jordan, and in particular the infrastructure projects and other large governmental projects, the main client is the government, which in turn fund its projects by loans from external donors. Local contractors have traditionally complained about the delay in collecting debts from the government, which in turn complained about delay in collecting debts from donors. As most government agencies experience financial problems, there are delays of payments to contractors – with a consequent adverse effect on the contractor's cash flow. This then affects the operation of the contractor, and hindering the projects from being delivered as required.

In this research consultant performance attributes were identified by ten items, which all revealed high RII values ranging from 0.78 to 0.91. Those consultant attributes were also identified in the literature as important attributes that affect the contractor's performance and on achieving successful projects (For example: Chaudhari *et al.* 2015; M. R. Lee *et al.* 2014; Sweis *et al.* 2014; Tan *et al.* 2011; Ali *et al.* 2010; Laryea 2010). The significant supplier performance attributes were agreed with previous research, which found supplier performance impacts on the contractor's performance in achieving successful projects, for example: (Xiong *et al.* 2014; Zulkiffli & Perera 2011; Watt *et al.* 2010; Zhu & Geng 2010; Yitmen 2007; Takim & Akintoye 2002; Yasamis *et al.* 2002). The high importance of the supplier performance on the overall project and on the contractor's overall business performance confirms the importance of selecting the appropriate supplier that based on the supplier performance.

In this research, external attributes were described as external contingency factors that out of the contractor's control, which might affect negatively on the contractor's performance in achieving successful project. All the factors pertaining to external attributes were rated as having high negative impact on the contractors' performance. This can be explained by the fact that SM local contractors in Jordan are often carry out work that unwanted by the large contractors (whose usually international contractors). Most of their work comprises maintenance and refurbishment work, usually from public works. Therefore, they are generally affected by the government's expenditure policy (Sweis *et al.* 2014; Al-Momani 2000; Al-Momani 1995). As most government agencies experience financial problems, there are delays of payments to contractors with a resultant divergent effect on the contractor's cash flow
(Sweis *et al.* 2014). This then negatively affects the operation of the contractor, eventually hindering projects from being executed as required. Further, SM contractors have trouble in obtaining money from financial institutions to finance their business due to the high levels of bankruptcy in the industry and in particular, amongst SM contractors; hence the initial capital for the business must come from the contractor. SM Jordanian contractors therefore operate on very tight budgets, and when they make a loss on one project, they tend not to have sufficient resources to continue in their projects, which is the case in

other developing countries (For example: Hauptfliesch 2006; Kimura 2002; Ofori 2001; Wasi *et al.* 2001; Ofori 2000; Larcher 1998; Ofori 1991).

6. Conclusion

In this investigation, the main construction stakeholders' groups in Jordan agreed on the most significant external contingency factors affecting contractor performance as illustrated by the statistical results of the questionnaire. The surveyed construction stakeholders agreed that the client performance has the most significant impact on the contractors performance (RII=0.82), followed by the consultant performance (RII=0.80), the external attributes that related to the business environment, regulations, laws and polices was ranked the third with (RII=0.78). On the other hand the supplier performance was ranked the least group of external factors that affect the contractors performance (RII=0.76). Ranking these factors from the Jordanian construction stakeholders' perspectives provides an insight into a critical issue in the construction sector, with its large contractor component. This research has provided solid evidence concerning the most, and the least, significant factors affecting the performance of contractors in the Jordanian construction industry. The study findings have implications for management practice and the government as it could help managers and decision makers of construction organisations to acknowledge the influence of external environment as sources of performance differences among contractors. The study contributes to current debate on the causes of performance differentials among small and medium size contractors firms in developing countries. Finally, as this study was conducted in Jordan, its results could be applicable to other developing countries whose construction sectors include similar factors. This investigation could be used as a starting point for further study of the contractor performance issue.

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