CONCEPTUAL FRAMEWORK ON INFORMATION TECHNOLOGY AND SUPPLY CHAIN MANAGEMENT ON OPERATIONAL PERFORMANCE IN CONSTRUCTION COMPANIES

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ABSTRACT

Project management is a very important discipline that acts to enhance operational performance. therefore, the project has a timeframe to finalize the project in proper quality and time with optimum cost. the objective of this study is to identify a conceptual framework that links the information technology used with supply chain management to improve the operational performance in construction companies, which considered essential tasks to ensure the quality of the product and services during approval and supplying stage. The problem is the absence of some advanced technologies to control and monitoring supply chain management in some of the construction industries. This study will focus on the big size, construction companies in the sultanate of Oman to get an efficient and effective result.

Keywords: *Information Technology, Supply Chain Management, Operational Performance, Construction Companies*

GRAPHICAL ABSTRACT

Fig. 1. Proposed Framework of the relationship among IT, SCM and operational performance

Literature Review

Thunberg et al. (2017) identified four kinds of common issues facing the construction industry, which are internal industries communication, material flow, project communication, and complexity. Other types of problems in construction concern different firms are participated to underpin the project such as contractors, suppliers, consultants, product manufacturers, etc. Construction (SC) Management (CSCM) is one of the factors, which can help to improve the operational performance of the project.

Supply Chain Management

(SC)Management (SCM) has been widely analyzed in the academic literature related to operations. Jonsson and Holmström (2016) mentioned the (SC) planning as an implemented operations planning and control framework, system, process, or method with an (SC) scope. Laureano Paiva et al., (2014) noticed that companies using (SC) planning practiced improved supply chain integration to improve the level of trust between the supplier and customer.

Information Technology

The research has discussed the importance of IT in the area of SCM which is used for communication of storing and supplying the product to a client, mentioned the notification of stock-outs by the manufacture to their client or contractors. Dimitrios at al., (2018) stated that the IT software such as industries process reference models can offer suitable guidelines to claims on the suppliers and the interactions between another supplier and the (SC) of other industries. Furthermore, Huang, (2013) SCM has become a kind of new construction management, according to the win-win collaborative business strategy which recognized by the SCM member, design manufacturers, suppliers, contractor with the help of the advanced information technology. Unequivocally, information technology has made easy and expedient communication and coordination among the user.

Operational Performance

Performance measurement is a very important indicator that measuring the organization's problem. Operational performance (OP) is defined as the actual outcome that measure by the indicators of quality improvement, efficiency/effectiveness, cost reduction, client unwavering ness, and on-time delivery of inventory to the organization (Iyer, 2011). According to (Ahmad & Schroeder, 2003) the Operational Performance is the most common indicator for measuring operational elements include cost, quality, delivery, and flexibility. Normally if the material is not managed properly, it will affect the cost in construction projects (Lenin, Krishmaraj, Prasad & Kumar, 2016).

Theoretical Framework

The relations proposed in the study framework (see Figure 1) has explained from studies in the literature on Information technology, (SC) management, and operational performance. Therefore, based on the analysis of previous studies, the purpose of this study is to define the relationship between IT, SC management, and operational performance in Oman construction project.

The Important of IT on SCM and Operational Performance.

The improvement of computer and telecommunication technology enables firms to enhance the efficiency of the transaction between the manufacturer and suppliers through information sharing and advanced IT utilization in communication (Kim, 2012). Information technology could improve performance and expedite the achievement of competitive advantage (Martín-Rojas, García-Morales, & Bolívar-Ramos, 2013). On the other hand, IT enables transportation management to make sure that the products/goods on the ship are meeting their promised arrival times. Very reporting, processing, and settlement are more straightforwardly handled with IT tracking system applications.

The employment of IT is expected to enhance both financial and operational performances (Liang, You & Liu, 2010). However, PerezArostegui et al. (2012) specified that IT can improve

a competitive advantage only if it is complemented by a set of pre-existing human and business resources in the organization (Kim & Pae, 2007; Nativi & Lee, 2012). In addition, several studies in the construction industries noticed a positive impact of the use of IT on many performance processes such as cost, schedule, safety performance, and construction firm performance (Kang, O'Brien, & Mulva, 2013). Moreover Vivek et al., (2018) stated that the flow of information in a best-planned method with admission to product information that will enhance client and provider relationships and this will improve client satisfaction and success of firm goals as well.

The important of SCM and operational performance

(SC) management is a very significant factor to improve the quality and target the proper completion date for the project as well as it is reducing the cost by avoiding resupplying of wrong product. That result to develop the performance coordination and efficiency models had been established in enhancing (SC) integrated systems (Rahdar & Nookabadi, 2014). therefore, coordination among (SC) members is essential to ensure management effectiveness and efficiency (Hu et al., 2013; Othman, 2011). Especially in the construction industry which is known to be fragmented and specialized in nature (Bemelmans, 2012; Mirawati et al., 2013; Nawi et al., 2013).

Furthermore, Odhigu et al., (2012) stated that productivity is a long-standing practice of productivity conceptions constitutes less cost, higher quality, and less time, of service and material that finally effects greater economic growth in a business organization. Some of the construction management currently has a lack of integration between project designers, main contractors, subcontractors, consultants, suppliers, project team, and the client at the last stage. Therefore, Integrated plans are a key plan to increase performance it does not make sense only to deliver better projects on/or before the deadline but to minimize the waste and to support cost reduction through the supply chain (SC).

Results and Findings

In this article, at first was explained the definition of SCM in construction industries, SCM and IT then operational performance afterward the impact of IT on SCM and operational performance was shown in a framework. As a result of that, the importance of IT on SCM is very important since it is used to improve communication and turn to reduce or maintain the project. Moreover, IT offers chances for industries to develop their markets worldwide. IT opens up the communication and enhance the knowledge sharing among the SCM members. In addition, IT improved teamwork in project and customer relationships for proposing and suggesting new material to get feedback from customers and share it with the manufacturers. This paper also provides new insights to use the advance technology for transportation that can enrich operational performance in the context of construction companies in Sultanate of Oman, at the same time extending current literature on how Information technologies have a positive effect to operational performance in the context of the construction industry in sultanate of Oman . Lastly, the framework introduced in this

study is to suggest a clearer picture of how information technology-mediated by (SC) management could somehow support providing better operational performance.

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Author's Biography

Issa khalfan Issa alsalmi born in Farq, Nizwa, Oman on 13th June, 1986. He completed his primary and secondary education at Abu Al-Aswad Al-Dawali School, Nizwa in 2005. He proceeded to university of Technology from 2006 – 2011 and further his first degree in Mechanical engineering at university of Technology. He pursued his Master degree in Business Administration at Middle East Collage at Muscat and graduated in 2016. He started his PhD at Universiti Selangor in December 2017. His research focuses on Leadership and Quality Culture on Quality Management Practices and Operational Performance of Construction Industries in Oman.