

Factors that Influencing Project Management Performance: A Review

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To Link this Article: <http://dx.doi.org/10.6007/IJARBS/v11-i8/10332>

DOI:10.6007/IJARBS/v11-i8/10332

Published Date: 17 August 2021

Abstract

Optimal project performance is vital to success and avoid delay. Assessing projects improve their performance by providing accurate feedback to team members and managers. To construct an assessment tool that is both valid and reliable, it is necessary to understand what should be measured. The purpose of this paper is to introduce a review on how to measure performance in the project and to determine factors that influenced the project performance.

The present paper focuses on the importance of project performance and the factors that influence on project performance. It also offer valuable information to the researchers in the field of project management. The outcome of this study introduces a literature review for project performance according to the previous studies in the field of project management. The analysis of the literature contributes to the body of knowledge on the subject of project management and factors that influenced project performance.

Keywords: Project Management, Project Performance, Project Performance Factors.

Introduction

Project management performance holds great value, particularly because of its emphasis on continuous improvement via different project types. The primary objective behind project performance is to increase the success of the project's outcome and thus, this calls for a frame of reference in understanding what is exactly meant by project success. Performance refers to the achievement and fulfillment of operations relating to a set of goals and successful project achievement is possible through the team members' maintenance of high-quality performance and effective skills to achieve project activities (e.g. Procurement, communication and support project integration) (Mohamed et al., 2017). In addition, It refers to the process of generating positive outcomes, which explains how management

decisions can affect performance (Anderson & Lannon, 2019). It has been described by Horner et al (2014) as the barrage of advantages that comes from project implementation.

Organizations are faced with several challenges that require enhancing the quality of their workforce for global level competition, as workforce is a core factor in organizations. Organizational performance is a complex concept that is affected by several constructs within the organization and in the environment (Ri et al., 2015). Suffice it to say that the human resources of the organization are its most critical tool to enhance performance, enabling its competition and excellence in the competitive market (Jha, 2016). In fact, among the top reasons behind failed projects is poor and ineffective project requirements and engineering practice (Yang, 2017). Successful projects, based on some studies, depend on time, scope and cost, but in reality, it covers other elements like acceptance of clients, reputation of the firm, the match between business strategies, ethical attitude, unity of the project team members and others (Bonghez & Grigoriu, 2013; Picciotto, 2020).

The efforts towards measuring project performance needs clear definition and accurate measurement in order to correctly understand and monitor project operations (Decotiiset al., 2017). Prior practice shows that project performance is referred to as comprising of the triple constraints, namely quality, time and cost (Sunindijo, 2015). Project management performance indicators are obtained from tactical and limited time perspectives, based on quantitative measurements (cost, time and effort variance) and number defects (Bernardo, 2014). Performance of short-term projects is the achievement of project, including project efficiency and timely success of the project, while long-term project performance is the potential created by the project for further future projects. Long and short-term facets of project success measures can be comparable to the sequential nature of product improvement projects (Popaitoon & Siengthai, 2014). Generally speaking, project performance is directly influenced by work quality in the phase of requirements analysis (Xiang et al., 2016). Factors that are present in the society and institution are also deemed as main determinants of the performance of multinational teams (Sağ et al., 2016).

Literature Review

Performance Definition

Performance is a concept that has been referred to as the goods/services generated during a specific period of time, based on the objectives. Two factors of performance that are significant are effectiveness and efficiency, and performance encapsulates the employee's efforts to achieve both factors (Kara, 2018). Employee performance is also described as the way employees realize goals of the organization and relate their inter-personal activities to the standards established within the organization (Osman et al., 2016). There are four main elements to organizational performance, namely general performance, technical performance, administrative performance and human performance (Ratnawat & Jha, 2019). In relation to this, inter-organization collaboration enables the exchange of resources and knowledge and leveraging the advantages of knowledge integration and specialization as they positively affect innovation performance. Hence, innovation performance brings about the enhanced performance of the organization (Cho et al., 2017).

Project Performance Measurement

Project employee performance represents the skills, behaviors, knowledge and values held by the employee (Rafiei & Davari, 2015) and because skills and abilities contribute to the performance of the organization and its productivity, any incurred training and development

costs are deemed to be a long-term investment from which benefits can be reaped. Also, Muda, Rafiki, & Harahap (2014) claimed that performance of employees forms one of the factors that can be utilized for the assessment of organizational performance via employee productivity, which means employee performance is the organization's capacity of achieving goals. In regards to this, performance appraisal practices represent HRM activities that produce critical data, for decision-making regarding HR actions and results (Yu & Cheng, 2014). Moreover, good level of employee performance is indicative of the employee's ability to contribute value to the organization through achievement of tasks (Muda et al. 2014). Within the organization, the innovative activities promoted influence the performance of employees and the operations and production as well as supplier connections and logistics (process innovation), particularly in innovative organizations and the bigger the size of the organization, the higher will be the number of cooperative partnerships it will have achieved (Cho et al., 2017). Prior studies in literature reached to the conclusion that training and development influence the performance of employees (e.g., Rragón, Jiménez, & Valle, 2014; Emenike et al., 2017). Other studies evidenced the role of training in enhancing employee performance (Seidle et al., 2016) and thus, training enhances both the organization's overall performance and productivity (Bhanugopan et al., 2017).

Traditional financial indicators take the form of earnings, profitability, market share and growth rate and these factors were used to gauge the performance of the organization. Nevertheless, there is another performance indicator type (non-financial indicator) that needs to be considered when measuring performance and this can be measured through quality, absenteeism of employees, turnover, job satisfaction and productivity (de Carvalho et al., 2015). Project performance measurement is complicated owing to the different utilized metrics in different projects (Looy & Shafagatova, 2016). Employee performance measurement has taken on a significant status as a cross-disciplinary topic in IS and management fields. Performance management system generally gauges the achievement of institutions using performance indicators of the effectiveness and the efficiency of managerial processes (Anderson & Lannon, 2019). Generally speaking, if a successful project is successful in its performance when it fulfilled its objectives, within the appropriated budget, planned quality, scheduled period and while making sure that stakeholders are all satisfied (Maqbool et al., 2017). Thus, an effective performance measurement is crucial to project success (Ofori-kuragu et al., 2015). Key performance indicators improvement contributes to the delivery of excellent project management processes and should thus be deemed as the characteristics of the project (Cha & Kim, 2018).

In the same way, project management implementation maturity should be measured using an effective framework that focuses on performance improvement (Miklosik, 2015). As stated by Rui et al (2017) performance measurement metrics is a crucial element of project assessment system in order to establish a benchmark for the performance of the project from different points of view. In the same study caliber, project managers were found to make use of time and cost as a measurement as projects generally address their success through them under a limited scope Sanchez, Terlizzi, & de Moraes (2017). Specifically, cost performance is considered as a major metric to identify if the project is successful because cost is the final result of the scope of the project (Rui et al., 2016). Schedule performance is equally significant as the construction costs incur labor wages and salaries of human resource (Thompson et al., 2017). Added to this, project complexity is another determinant of project management performance, measured by the budget and schedule outcome (Bjorvatn & Wald, 2018). With regards to the topic, Silver et al (2016) related that a skilled team equipped with problem-

solving, change management, and effective leadership is the first step to performance evaluation while Das & Ngacho (2017) added that the above is apart from the traditional project performance criteria of cost, time and quality. In other words, a team measurement system gauges the team's individual characteristics (skills, knowledge, abilities and the like), team work and task work processes states of conflict, collaboration, communication and cohesion, coupled with team outcomes (Wiese & Florida, 2015). From Ofori-kuragu et al. (2016), a set of nine key performance indicators (KPIs) were proposed, which included cost, quality, client satisfaction, time, business performance, health and safety, people, productivity and lastly, environment.

High level of business competitiveness in the market needs quality and performance assessment so that companies can effectively evidence the enhancement of work quality (Willar, 2017). Successful project leads to advancements in the tools, processes and systems of project management (Mir & Pinnington, 2014).

Furthermore, measurement of project performance entails the determination of a group of measures, measuring the aspects/factors that service users and stakeholders' find significant, and staff involvement in identifying the measures to ensure that perception measures and quantifiable performance indicators are all covered (Ofori-kuragu et al., 2016). In addition to the above, Ofori-kuragu et al (2016) further stated that performance measures refer to a group of metric utilized to quantify the actions based on effectiveness and efficiency and they are the basis of determining and defining the operational improvements requirements in organizations (Al-kaisy et al., 2018). Teams' assessment will lead to their enhanced performance as they are presented with dependable and timely feedback (Marriage & Kinnear, 2016). Thus, project management should place emphasis on the execution, overseeing, and controlling activities, using valid metrics to ensure successful outcome (Montero et al., 2015). Organizations need to be prepared to use performance indicators for the system projects control to garner authentic information, required for making decisions among governance positions and levels (e.g., executives, board level, contextual level and individual level) (Heinze & Heinze, 2018). Industrial performance influences the economic performance and thus, it has to be measured and benchmarked for sustainable industry (Hwang, 2013).

In the same study line, a performance indicator metric for project performance measurement should be used along with KPIs includes the cost, schedule and quality that are the often KPIs used for performance measurement of the project (Yun et al., 2015). In a related study, Leong et al (2014) empirically provided five main variables for measuring the performance of projects, and they are cost performance, quality performance, time performance, safety and health performance, and finally, client's satisfaction. In the context of gas and oil projects, understanding cost performance was found by Rui et al. (2016) to be significant to controlling projects (present and future) and in the cost reductions implementation success. Additionally, risk management is the focus of project-basic firms, with its primary objective being to produce organizational value (Khameneh et al., 2016). The measurement of technological and non-technological innovation performance adopted in this study was obtained from prior innovation studies and they are increased efficiencies, innovation rate, administrative processes development and enhanced employee effectiveness (see Damanpour, 2014; Lau & Lo, 2015; Osman et al., 2016). In relation to this, the benchmarking method develops satisfaction of the stakeholders of the project and provides data needed for the evaluation of the project that is useful for external and internal organizational benchmarking from the industry's point of view (Kärnä, 2016).

With regards, to audit performance, Zailani, Govindan, Iranmanesh, & Shaharudin (2015) explained its requirement in several project types, although the current methods for establishing capital performance audit have high variability and formal standard are known to stress on engagement management rather than project management. Performance audit integral factors of economy, efficiency and effectiveness are also largely ignored in practical activities. A significant relationship exists between project progress management methods and on-time completion (Winter & Chaves, 2017). In sum, the employees' performance considerably influences the project and the industry as a whole, and thus it has to be measured and benchmarked for sustainable economy (Hwang, 2013).

Factors Influencing project Performance

Integration management as well as other practices of project management is of great significance as the effectiveness of project management is initiated with the processes and people integration in the construction project to ensure performance enhancement (Demirkesen & Ozorhon, 2017). For a successful project, it is mandatory to determine project success and its measurement and this requires knowledge sharing and communication to enhance the performance of cost, time and quality of the project (Lindhard & Larsen, 2016). According to Fink (2014), the gaining of strategic positions and performance among firms necessitate specific firm competence compared to their rivals, and in light of projects, better governance of the numerous relevant factors and systems could lead to enhanced project performance (Haq et al., 2018).

Different elements are incorporated by projects such as technology, tools, methods and models out of which human element is the top element in projects that drives its performance (Zidane, Hussein, & Orn, 2016). Projects are efficiently completed through the execution of strategies by the project management and the summary of the whole work (An et al., 2018) and as such, the members of the project team needs to be motivated and committed to the successful project performance (Larsson, 2018). Also, the project performance in meeting success criteria is upped when the right procedures exist for the just treatment of the members of the team, when the resources are fairly distributed and when the members' interaction is based on respect, propriety and dignity (Unterhitzberger & Bryde, 2018). In this background, it is the culture that pre-determines the actions of the members and as such, the culture of the team members should be determined to take appropriate actions during project management (Horner et al., 2014). Project manager's importance lies in leadership as it is a major success factory in any activity involving collaboration among people (Lancker et al., 2016). The type of leadership that positively influences promotion focus is transformational leadership and that positively influences prevention focus in project team performance is transactional leadership (Lai et al., 2017).

In project management, performance measurement in the context of construction is also critical considering its impact on the global economy. Thus, effective project management is compulsory for higher construction performance (Demirkesen & Ozorhon, 2017). In a similar study, Anantatmula (2015) revealed that governing policies and procedures, effective communication management plan and collaborative culture of the project should be established to enhance the performance of the project. ICT research in construction sector in the developing nation's context can contribute to providing insight into project performance and its enhancement (Ikediashi & Ogwueleka, 2016). Added to the above, knowledge advancements are required to urge organizations to manage project team performance optimally (Liu & Cross, 2016), with mega-projects being more sensitive to specific factors

compared to their small-sized counterparts (Caldas & Gupta, 2016). Management of large-sized projects is however quite challenging as opposed to managing typical internal projects as evidenced by Patanakul (2014). Historically, infrastructure megaprojects are related with ineffective delivery in light of cost and schedule performance (Locatelli et al., 2017). As for the effective workflow management, it can be realized through the promotion of a reliable work-place via which planning strategies can facilitate the increase/decrease of the project duration, total capacity lost and total inventory buffer as reported in Javanmardi et al.'s (2016) study. Also of importance to project management are coordination factors that ensure successful project stages implementation (Alaloul et al., 2016). These are described by Oliveira & Lumineau (2017) as activities set into motion and influence performance. Projects alliances frequently contribute superior value for money and value in general in comparison to traditional approaches (e.g., design and construct) (Henry et al., 2015).

In the same study line, Heckmann et al. (2015) revealed that the capacity of the organization to change is positively associated with change project's performance. Enhanced organizational performance can be achieved through ensuring consistent quality enhancements, cost optimization and productivity, flexibility and safety enhancements and timely deliveries (Randhawa & Ahuja, 2017). Risks arising from performance indicators can be mitigated through strategies adopted consistent with the complexity type and level (Florice et al., 2016). Both project performance and project management can be measured by the level to which constraints are overcome to satisfy the objectives of the project (scope, time and cost) – such overcoming is the key to successful project management (Rugenyi & Bwisa, 2016). They have been referred to as the project management triangle, iron triangle, and project triangle. In relation to this, high-cost overruns and schedule delays prevent the motivation of oil and gas firms to invest in the face of risky opportunities (Rui et al., 2018). In addition, customer base also limits the internal financing of the firm and the investment on R&D (Notari et al., 2014). In this background, incentive contracts have a higher likelihood to display better performance compared to those without incentives as the former promotes better relational attitudes and quality in teamwork (Suprpto et al., 2015).

In the case of international construction, ongoing challenges in achieving project cost and time performance have been reported by contractors, which is frequently related to using different foreign standards that are significant different from the local standards (Lei et al., 2017). Diethelm et al. (2016) found that the higher the percentage of prevention practices established through a strategy, the lower is the rate of accidents, and the higher the enhancement level of safety performance. Safety performance is determined by management activities within the stages of the project and the interactions of factors at different levels of hierarchy (Mohammadi et al., 2018). In other related studies, Horner et al. (2014) and Smits, Buiten, & Hartmann (2016) found knowledge and information to significantly influence the performance of employees in projects. Project management knowledge value is related to the analysis and positioning tool usage to enhance the performance of project management (Brookes et al., 2014). Along the same study line, Wang et al. (2018) stated that project management requirement of coordination and integration of bilateral exertions of client and its provider is rife with challenges, whereas Rui et al. (2017) highlighted the influence of regulatory requirements and political climate on the performance of O&G projects. The above mentioned factors significantly and in combination affect offshore projects and result in higher complexity and interfaces compared with other industries' projects. Stakeholders also have a key role in successful project management (Aragonés-beltrán et al., 2017), with stakeholder management (SM) involving the

engagement of project management research domain and the concerned industry (Oppong et al., 2017).

Methodology

The paper takes account the review of related literature allocated to project performance and project employee performance to achieve the study objectives. The review covers the definition of performance and project employee performance. The research basically focuses on explaining how to measure performance in the project and the factors that influenced the employee performance.

Findings and Discussions

The present study conducted a thorough review of literature for the previous studies to provide an overview of factors that influence the project performance and found that employs different measures leading to different definitions. The studies by Kara (2018); Ofori-kuragu et al (2016); Osman et al (2016); Ratnawat & Jha (2019) described effective performance measurement important to the success of the project. In prior studies, the relationship between the two has been statistically proven to be positive (e.g., Mir & Pinnington, 2014; Rivera-ruiz & Ferrer-moreno, 2015).The attainment of enhanced project performance is possible through adoption of innovation and skills training in order to improve the efforts towards performance (Wisdom et al., 2014). This is possible by placing emphasis on quality improvements, optimization of costs, productivity, flexibility, and safety enhancements and timely delivery (Horner et al., 2014; Kim & Lui, 2015; Oppong et al., 2017; Randhawa & Ahuja, 2017; Rui et al., 2017; Smits et al., 2016).More importantly, three deliverable objectives have been the traditional determinants of project performance, namely time, cost and quality and majority of studies presented significant performance measures which are also referred to as popular KPIs.

In the reviewed literature, performance measurement has been evidenced to be crucial to performance improvement efforts (Ofori-kuragu et al., 2016) and majority of studies, as mentioned, are of the consensus of the simplistic measure of performance through the cost-time-quality triangle. Specifically, a performance measure refers to a metric utilized to quantify the action's efficiency and effectiveness (Randhawa & Ahuja, 2017) . Organizational survival depends on its ability to provide creativity, innovation and inventive training to its employees so that they will work towards obtaining competitive advantage and enhanced performance (Abdullahi et al., 2018).

Training is an effective mechanism to bring about enhanced innovation in the firm as a result of which organizational performance is also enhanced. Adoption of innovation involves training and performance efforts, with innovation being the basis of the firm's achieving optimum performance.In sum, most of the previous studies' results support the idea that in the midst of these measures, cost, quality and time remain three of the essential measures for project performance. Other KPIs mentioned in literature include human resources, innovation, business performance, productivity, health and safety and environment (Anantmula, 2015; Caldas & Gupta, 2016; Ikediashi & Ogwueleka, 2016; Leong et al., 2014; Liu & Cross, 2016; Yun et al., 2015).

The previous studies suggested that there are many factors that influenced project performance , according Horner et al (2014); Smits, Buiten, & Hartmann (2016) knowledge and information is significantly influence the employee of projects. The members of the project team needs to be motivated (Larsson, 2018). Within this context ,knowledge advancements are required to

urge organizations to manage project team performance optimally (Liu & Cross, 2016). Horner et al. (2014) proposed that the culture of the team members should be determined to take appropriate actions during project management. In addition a better governance of the numerous relevant factors and systems could lead to enhanced project performance (Haq et al., 2018). Diethelm et al. (2016) introduced an approach that the higher the percentage of prevention practices established through a strategy, the lower is the rate of accidents, and the higher the enhancement level of safety performance. In this sense, the study by Anantatmula (2015) found that governing policies and procedures, effective communication management plan and collaborative culture of the project should be established to enhance the performance of the project. According to Heckmann et al. (2015) revealed that the capacity of the organization to change is positively associated with change project's performance. Stakeholders also have a key role in successful project management (Aragóns-beltrán et al., 2017). Training and development influence the performance of employees (e.g., Rragón, Jiménez, & Valle, 2014; Emenike et al., 2017) and adoption of innovation is another strategy to improve project performance (Wisdom et al., 2014).

Along the same study line, Wang et al. (2018) stated that project management requirement of coordination and integration of bilateral exertions of client and its provider is rife with challenges, whereas Rui et al. (2017) highlighted the influence of regulatory requirements and political climate on the performance of O&G projects. The above mentioned factors significantly and in combination affect offshore projects and result in higher complexity and interfaces compared with other industries' projects.

Conclusion

The literature review findings indicate that project performance has been traditionally viewed as having three major factors that influence the project performance namely time, cost and quality. However, other performance factors known as KPIs should also be taken into consideration as most of the authors laid emphasis on. Indubitably, cost, quality and time are significant project performance measures but along with them are KPIs of administrative business performance, productivity, people and environment. The paper concluded that there are many factors that influenced project performance as discussed in the previous studies, they are Training and human development (Rragón, Jiménez, & Valle, 2014; Emenike et al., 2017) knowledge and information, motivation (Larsson, 2018), team culture (Horner et al., 2014), innovation adoption (Wisdom et al., 2014), governance of the systems (Haq et al., 2018), safety and health practice and training (Diethelm et al. 2016), governing policies and procedures, effective communication management plan (Anantatmula (2015), knowledge advancement (Liu & Cross, 2016), the capacity of the organization to change (Heckmann et al., 2015). coordination and integration of bilateral exertions of client and its provider (Wang et al., 2018), regulatory requirements and political climate (Rui et al., 2017), and Stakeholders management (Aragóns-beltrán et al., 2017). The importance of this study lies in the discussion of the most critical factors that impact project performance. The result of this study is expected to be of great value to the project managers and researchers in the field of project management and management in general. Future research should attempt to examine the impact of these factors on the project performance by using case studies, this type of method could help to study these relationships.

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