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Evaluation of the relationship between project management and productivity in construction industry

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Abstract
Many construction projects begin with strong intentions, enormous resources, and tremendous efforts, yet the majority of them fail miserably. Lack of knowledge or definition of project scope, cost, risk, and good communication at the outset of the project is a primary contributor to project failure. The project's value may be understood in terms of how well it meets client demands, aligns project output with the organization's goal, and provides a return on investment. The primary goal of adopting a project management framework is to boost organizational productivity by appropriately utilizing the required materials for the execution of any given construction project and obtaining the intended outcome without material loss or mismanagement. The organization can gain from employing a project management framework by boosting the efficacy and efficiency of human effort in the organization. As a result, project success is determined by its efficiency in the near term as well as its efficacy in attaining the intended goals in the medium and long run. The study is aimed at evaluating project cost management, project scope management, project communication, and project risk management and their relationships with productivity in the construction industry.

Keywords: Project management, Project manager, Productivity, Construction project.

1. Introduction

Project construction is one of the most prevalent occupations in people's lives, yet it is also regarded as one of the most challenging human endeavours. This is due to the fact that each project entails sophisticated and complex procedures that must be completed by many people from various professions, each with their own set of skills and expertise that make up the construction business (Enshassi and Al-Hallaq, 2006). According to Abbasi et al. (2005), the construction industry includes organizations involved in the design, manufacture, alteration, rehabilitation, maintenance, facility management, demolition, and re-cycling of building and civil engineering works, as well as the provision of resources. It encompasses all internal and external stakeholders who support the industry's policies, processes, practices, and culture in some form.

In the construction sector, the success of a project is determined by how well resources are managed to achieve the required results. A project, according to Johnson and Hall (2007), is a short-term activity undertaken to produce a one-of-a-kind product, service, or outcome. The term "temporary" refers to a delivery that has a set time limit. As a result, the incapacity of individuals in charge of those projects to plan, coordinate, and manage the resources available might lead to increased expenses, time overruns, poor product quality, and inefficiency, all of which could stymie the project's output and organizational performance. Hendrikson (1988), observed that every project requires a structure through which activities are identified, resources are allocated, master routines are established, and placements and procedures are established to guide the performance of duties, thereby giving need to the concept of project management. Project management integrates the processes of initiation, planning, executing, monitoring, controlling, and closing progressively through the project life cycle with the aim of satisfying the stakeholders and constituents according to the project's established requirements.

The construction sector, in particular, must be dynamic in order to adapt to the ongoing changes that the globe faces, as well as the social, economic, and technical difficulties that influence all businesses. Client, company, and employee expectations vary over time. Therefore, the construction industry's vision is expected to continually evolve and keep updated with recent practices as well as in management adaptation. Conversely, within the scope of any particular project, there are a variety of project management activities and strategies that may be used to assure the project's success. As day-to-day routines change, many actions have emerged and become normal. Norrie and Walker (2004) argue that project managers may choose and adhere to particular project management methods for reasons that are unrelated to the project's success. Cooke-Davies (2002) argued that several approaches are used in project management but are not recognized as project management practices. Thamhain (2004) asserted that the types of project management approaches used by various firms to achieve project success may also impact variation in project performance. In order to determine the link between acceptable project management practices and project performance, the importance of such variances in project performance and effectiveness must be determined. Particular industries, such as information technology and small businesses, have received a lot of attention. However, in the construction industry, far less emphasis is devoted to the role of project management methods in terms of productivity. The primary purpose of this study is therefore, to evaluate the role of project management in achieving optimum productivity in construction industry. This study establishes the effect of project cost management, project scope, project communication, and project risk management in executing effective projects in the construction industry.

2. Literature Review

Overview of Project Management

Conceptually, project management has a variety of definitions. Project Management Body of Knowledge defines it as "the application of knowledge, skills, tools, and methods to project activities in order to meet or exceed stakeholder demands and expectations" (PMI, 2013). Definitions vary according to the goals and needs of the organization. Project management in construction industry does not differ much from project management in general; Walker (2007) defined it as “The planning, co-ordination and control of a project from conception to completion on behalf of a client requiring the identification of the client’s objectives in terms of utility, function, quality, time and cost, and the establishment of relationships between resources, integrating, monitoring and controlling the contributors to the project and their output, and evaluating and selecting alternatives in pursuit of the client’s satisfaction with the project outcome”. Project management is a task of executive leadership and offers the cohesive force that binds together the different elements into a team effort for project completion. Hence some theorists emphasize that behavioural aspects associated with the PM, such as attitudes, practices all which are related to project performance.

Project Management Practices - Knowledge Areas as Practices

Project management practices according to the Project Management Institute (PMI, 2013), refers to an optimal way currently recognized by the project management industry to achieve a stated goal or objective. This is an idea that asserts that there is a technique, method, or process (through research and application) that is more effective at delivering a particular outcome than any other technique, method, or process when executing a project. The Project Management Body of Knowledge (PMBoK, 2008) defined nine main knowledge areas that are typical for all projects in all spheres, irrespective of the project management methodology used. These areas are: project integration management, project scope management, project time management, project cost management, project quality management, project human resource management, project communications management, project risk management, and project procurement management. However, in this study, focused was placed on four knowledge areas, which includes, project cost management, project scope management, project communication management, and project risk management, as key project management practices affecting organizational productivity in the construction industry.

Fig.1: Knowledge Areas Typical for all Project

Kezner (2006), opined that beginning with the scope of a project is a right professional step. Although scope can be investigated from the originating reasons for the project, it must also consider the expected work, outcomes, and deliverable (s). In Brandon’s opinion, project scope management is the description of the project work to be performed in terms of the desired results (Brandon 2006). Cuganesan et al. (1997) supported this view when they opined that project scope gives a description of how every project is executed with a set of deliverable(s) and an expected closure time. Prior to this closure period, predetermined tasks and activities to successfully complete the project are stipulated. These tasks constitute the scope of the project. The Project Management Institute (2013) described scope management as the sum of processes needed to ensure a project contains all the work required,

and only the work required, to complete the project successfully. PMI (2013), further indicates that items such as: project and product objectives; product or service requirements and characteristics; product acceptance criteria; project boundaries; project requirements and deliverables; project constraints; project assumptions; initial project organization, initial defined risks, schedule milestones, initial Work Breakdown Structure (WBS), order of magnitude cost estimate, project configuration, management requirements, and approval requirements are all considered part of project scope management, after which the next big deal to consider is the financial and costing aspect of the project.

PMI (2013) defined project cost management as the processes required to ensure that a project is completed within an approved budget, which includes tactical aspects such as resource planning, cost estimation, cost budgeting, and cost allocating and controlling within the project. To support this, Langfield-Smith et al. (2006) emphasized that project cost management is the improvement of an organization's cost effectiveness by understanding and managing the real causes of cost during a project's life cycle. They contend that although the predominant focus of cost management is on financial cost projection, it also endeavors to improve other aspects of productivity, such as quality and delivery. According to Hilton et al. (2001), project cost management is a philosophy of seeking increased customer value at a reduced cost, an attitude that all project costs are determined by management decisions, and a reliable set of techniques that increase value and reduce project costs. Hansen and Mowen (2003) added that cost management identifies, collects, measures, classifies, and reports information that is useful to managers in costing, planning, control, and decision-making in any construction project. For the purposes of this study, project cost management is defined as those actions taken by the project managers for estimating, allocating, and controlling costs within construction projects, which are communicated to the parties involved in order to ensure that the projects get done successfully.

Communication during a project provides the baseline for the appropriate checkpoints or tasks to be added to the project plan, which is a key component to the success of any project. Project Communication Management is the knowledge area that employs the processes required to ensure timely and appropriate generation, collection, distribution, storage, retrieval, and ultimate disposition of project information (PMI, 2013). Gould (2009) defines it as the organization and control of information transmitted by whatever means necessary to satisfy the needs of the project and includes the processes of transmitting, filtering, receiving, interpreting, or understanding information using skills appropriate to the application of the project environment. Project communication management is a collection of processes that help make sure the right messages are sent, received, and understood by the right people. Information includes project status, accomplishments, events that may affect other stakeholders or projects, and so on. Heerkens (2001) affirmed that the approach to project communication management involves communications planning—determining the information and communication needs of the stakeholders, when they need it, and how it will be given to them. This therefore led to PMI's (2013) introduction of the five processes for project communication management, which include identifying stakeholders, planning communication, distributing information, managing stakeholder expectations, and reporting performance, all of which are not done in vague terms without communicating the risk attached to carrying out the project.

Fig. 2: Processes for project communication management

Within project management, there are uncertain events that may or may not occur during a project that are capable of affecting the progress of the project either negatively or positively. This uncertainty therefore requires management as this could hinder the attainment or progress of the project objectives. According to Smith and Merritt (2002), project risk management is a structured approach for the identification, assessment, and prioritization of risks followed by the planning of resources to minimize, monitor, and control the probability and impact of undesirable events. PMBOK (2000) defines risk management as the systematic process of identifying, analyzing, and responding to project risk, thereby ensuring that a project is completed within time and budget, as well as fulfilling its goals. It includes maximizing the probability and consequences of positive events and minimizing the probability and consequences of events adverse to project objectives (PMI, 200). Therefore, it is important for project managers to acknowledge that it is their responsibility to oversee the risk management process throughout the duration of a given project and ensure the project meets its objective even as it contributes to the productivity and performance of the organization.

Concept of Productivity

Every organization is often concerned about how specified resources are managed to accomplish timely objectives as stated in terms of quantity and quality, which are all variables of productivity. Productivity may also be defined as an index that measures output (goods and services) relative to the input (labor, materials, energy, etc., used to produce the output). Productivity is often measured in terms of outputs per time or resource spent when studying project management. Construction productivity has been an

area of research interest for some academic period. It is very difficult to set a benchmark for productivity and standard productivity measures to increase output. As Stone et al. (2012) argued, rather than trying to find a direct causal link between specific management practices and productivity, it is more sensible to take a contingent approach and look for bundles of practices that are more or less likely to lead to more productive outcomes. This is because projects are usually planned and calculated based on historical data and experience. It is important to take into account the differentiators and the variables that we need for the project and the different factors (Neelamkavil 2009; Burgess et al. 2017). The various factors include: size of the project undertaken, project design complexities, bearing site conditions such as soil drainage topography, and weather conditions such as rain, summer, winter, etc. Material source supply and IDs, transportation and logistics complexity, and design changes (Chalker and Loosemore 2016; Wang et al. 2013).

In this regard, execution of projects in an organization is undertaken through various project management practices, through which specific objectives are tied to the project. The ability to successfully execute these projects is what drives the realization of intended benefits and the achievement of organizational productivity. Given the strategic impact that projects have on organizational growth, project managers are expected to employ best practices to ensure the right projects are delivered in alignment with organizational priorities in order to realize improved organizational performance.

3. Methodology

An exploratory research design will be used in this investigation. An exploratory design, according to Saunders, Lewis, and Thornhill (2019), is one in which the researcher seeks information that will aid in the understanding of a subject. In an exploratory study design, the researcher's goal is to find answers to questions like "what, how," and "why." The relationship between project management and productivity in the construction industry was established in this study.

Data for this study were sourced through secondary methods and were analysed using a thematic method of analysis to adequately explain and support the relationship between project management and productivity.

4. Discussions

According to the Project Management Institute, defining and controlling the project scope has an impact on the overall success of the project (PMI, 2013). In the process of regulating project scope, the PMI observed that it is concerned with influencing the variables that cause project scope changes as well as the consequences of these changes. Project scope management is in charge of ensuring that requested modifications are handled through the change control procedure. An essential purpose of scope management, as stated by PMI (2013), is the duty of scope management procedures to manage actual project modifications that are not connected to organizational change management, and to integrate the changes with other regulating processes. Unplanned modifications are sometimes referred to as "scope creep" (Nakarajan, 2012). Scope creep is an unwelcome byproduct of a poorly managed project scope, and it frequently leads to serious challenges in projects or is a cause of project failure, resulting in low productivity and lower revenues for the construction industry (Dekkers & Forselius, 2007).

Drury (2017) asserted that there is a greater emphasis on analyzing profitability and costs in order to improve the construction sector's efficiency and, ultimately, project productivity. According to Drury (2017), cost management has a favorable impact on productivity because financially successful construction projects rely on precise project cost control. Cost, as stated by Nagarajan (2012), is seen as a key indicator of good project management and higher productivity in terms of increased profitability. Project cost management increases project productivity by increasing resource control and transparency and decreasing risk (Cicmil et al., 2015).

A lack of good, coordinated communication management causes 80% of projects to fail (PMI, 2013). Projects with inadequate communication among project participants always fail to accomplish their goal or purpose, which might be attributed to expense overruns and/or delivery delays. As a result, project communication management is one method that may be utilized to achieve a construction project goal, resulting in increased project productivity as a result of timely project completion within budget (Nagaraja, 2012). Communication and documentation are natural mixes since they tie the project together from start to finish, and information distribution ensures that relevant information is made available to project stakeholders in a timely manner (Heerkens, 2012). Constant and efficient communication between all project stakeholders is regarded as one of the most important and critical components in ensuring project success. It is seen as a need to do the right thing in the right way. Because knowledge is believed to be power, it is also crucial to recognize that the act of sharing information serves to empower all project stakeholders for support, resulting in increased productivity (Kerzner, 2009). A close-out report will be produced at the conclusion of the project to conclude the project in the eyes of all stakeholders and to act as a reference for future development. According to Kerzner (2009), project success is heavily reliant on good project communication management, with the majority of project management time spent on some sort of communication within the project team or with customers, which is crucial for increased project productivity.

Watt (2017), asserted that risk and risk management are key concerns for all businesses, particularly those in the construction industry, which is particularly vulnerable to business risk and competitiveness. The risk management role in a construction project is often associated with the company's appraisal of the project's hazards and opportunities (Watt, 2017). According to Howell et al. (2013), good risk management in projects assures all areas, such as project completion, customer satisfaction, and improved financial performance of the firm. Howell et al. (2013) opined that to correctly manage a project by assuring on-time completion and profit for a construction project, it is critical to identify, assess, and control the risks involved. A proper investigation of the diverse risks associated with a given construction project, enables the project manager to effectively and efficiently execute the task with ease and minimize lost.

5. Conclusion

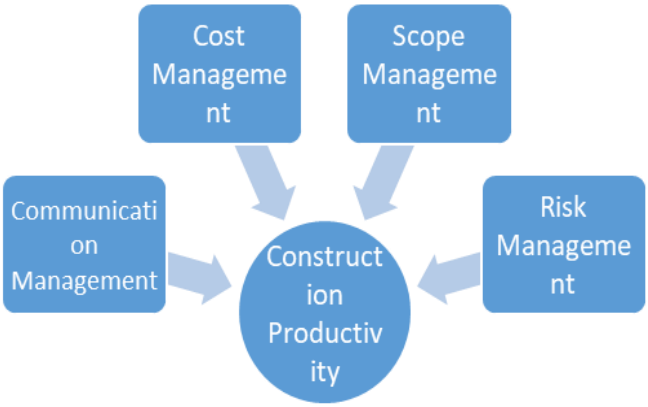

Fig. 3: Relationship between the four knowledge areas and construction productivity

The positive and significant relationship between project management and productivity in the construction industry cannot be disparage as the neglect of the thrust of project management impairs any given construction project. This study have explored the relationship between project cost management, project scope management, project communication, project risk management and productivity in the construction industry. Previous empirical findings revealed that an important function of scope management is its responsibility for managing the actual project changes, not related to organizational change management, and integrating the changes with other controlling processes of any given construction project. Further evidence shows that project cost management has a positive influence on productivity as financially successful construction projects depend on strict project cost control. Constant and effective communication between all the stakeholders of the projects is considered the most vital and crucial factor in order to ensure the success of the project. Finally, the study revealed that in managing a project properly, ensuring on-time project completion and maximizing profit for construction projects, it is crucial to identify, analyze, and control the risks involved in this regard through project management.

6. Conflict Of Interest Statement

The author(s) declare that there is no conflict of interest.

7. References

1. Abbasi, G.Y. Abdel -Jaber, M.S. Abu Khaeejeh (2005) A. Risk Analysis for the Major Factors Affecting the Construction Industry in Jordan. Emirates Journal for Engineering Research, Vol. 10.
2. Brandon, D. (2006). Project Management for Modern Information Systems: Christian Brothers University, USA.
3. Chalker, M. and Loosemore, M. (2016) Trust and productivity in Australian construction projects: A subcontractor perspective. Engineering, Construction and Architectural Management, 23(2), 192-210.
4. Cicmil, S., Hodgson D., Lindgren M., Packendorff J. (2015). Project Management Behind the Facade. Ephemera theory & politics in organization, 9(2): 78-92.
5. Cooke-Davies, T. J. (2002). The “real” success factors on projects. International Journal of Project Management, 20 (3), 185–190
6. Dekkers, C & Forselius, P (2007). Increase ICT Project Success with Concrete Scope Management, PMI Global Congress, Hong Kong, China.
7. Drury, C. (2017). Management and Cost Accounting, 7th edition. Cengage Learning, London.
8. Enshassi, S . Al-Hallaq K. Mohamed (2006). Causes of Contractor's Business Failure in Developing Countries. Journal of Construction in Developing Countries, 2006. Vol. 11.
9. Heerkens, G. (2012): Project management. McGraw-Hill, New York
10. Hendrikson, C (1988). Project Management for Construction Fundamental Concept for Owners,Engineers,Architects and Builders. New Jersey : Prentice- Hall, Inc, .
11. Hilton, R., Maher, M., Selto, F. and Sainty, B. (2001): Cost Management: Strategies for Business Decisions. 1st Edition. McGraw-Hill Ryerson, New York.
12. Howell, D., Windahl, C., Seidel, R. (2013). A project contingency framework based on uncertainty and its consequences. International Journal of Project Management, 28(3), 256-264.
13. Kerzner, H. (2009). Project Management: A Systems Approach to Planning, Scheduling, and Controlling. New Jersey: John Wiley and Sons.
14. Nagarajan K. (2012): Project Management, 6th Edition, Publisher New Age International (P) Limited, New Delhi.
15. Norrie, J., & Walker, D. H. T. (2004). A balanced scorecard approach to project management leadership. Project Management Journal, 35(4), 47–56.
16. PMI. Project Management Institute, (2013). A Guide to the Project Management Body of Knowledge (PMBOK® Guide). Fifth ed. Project Management Institute, Inc., Pensilvânia, USA
17. Shenhar, A. J., Dvir, D., Levy, O., & Maltz, A. C. (2001). Project success: A multidimensional strategic concept. Long Range Planning, 34, 699–725.
18. Song, L. and AbouRizk, S. M. (2005) Quantifying engineering project scope for productivity modeling. Journal of Construction Engineering and Management, 131(3), 360-367.
19. Stone, I., Mavrodiev, P. and Schweitzer, F. (2016) From Aristotle to Ringelmann: A large-scale analysis of team productivity and coordination in open-source software projects. Empirical Software Engineering, 21(2), 642-683.
20. Thamhain, H. J. (2004). Linkages of project environment to performance: Lessons for team leadership. International Journal of Project Management, 22, 533–544
21. Walker, A. (2007) Project Management in Construction. Oxford, Blakcwell, .
22. Walker, D. H. T. (1995) An investigation into construction time performance. Construction Management and Economics, 13(3), 263-274.
23. Wang, D., Arditi, D. and Damci A. (2017) Construction project managers’ motivators and human values. Journal of Construction Engineering and Management, 143(4).

24. Watt J (2017). Strategic risk management for small businesses. In: Reuvid, J. (ed) Managing Business Risk 2nd Edition - A Practical Guide to Protecting Your Business Philadelphia: Kogan Page
25. Saunders, Mark & Lewis, Philip & Thornhill, Adrian & Bristow, Alex. (2019). "Research Methods for Business Students" Chapter 4: Understanding research philosophy and approaches to theory development.