

THE INTERNATIONAL JOURNAL OF BUSINESS & MANAGEMENT

Project Manager's Competencies and Sustainability of Public Projects

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Abstract:

The objective of this study was to examine the relationship between Project Manager's competencies and sustainability of public projects while seeking to establish whether project performance mediates this relationship. The research also seeks to establish whether Project Management certification has a moderating role on the relationship between project manager's competencies and project performance. Extensive desk-top review of theoretical and empirical literature has been done to examine these relationships. From the reviewed literature, majority of scholars concur that there is a set of skills that account for the significant differences indicated between outstanding and average performers. No study was particularly identified that investigates the mediating and moderating effect of project performance and project management certification on the relationship between project manager's competencies and sustainability of public projects in Kenya, with the concept of sustainability attracting diverse definitions among scholars. Results from an empirical investigation on the phenomenon in this conceptual review will aid in developing training programs and academic curricula tailored to meet the needs of public sector employers. The outcomes of this research will provide criteria for the selection of project managers.

Keywords: Project manager's competencies, project sustainability, project performance, public sector projects

1. Introduction

Sustainability is one of the most important challenges of the twenty first century. Organizations today are grappling with the question of how to develop prosperity without compromising the life of future generations. Companies are integrating ideas of sustainability in their marketing, corporate communication, annual reports and in their actions (Goedknecht&Silvius, 2017). Projects are therefore, instrument of change within organizations, which play an important role in the realization of sustainable business processes and practices. According to Silvius and Schipper (2014) it is becoming clear that the project management practice must embrace sustainability in order to develop into a 'true profession'. They posit that, in project management, sustainability can be gained in both the product of the project and in the process of delivering the product. Nine sustainability principles have been identified that should be implemented in the project management practice, values and ethics; holistic approach; long term view; large scale, risk reduction, participation, accountability, transparency and stakeholder interest. Agyekum-Mensah, Knight and Coffey (2012) propose that technology is gaining importance in the sustainable development agenda. According to Agyekum-Mensah et al. (2012) 4Es (project management model) and 4 Poles (poles or factors of sustainability) model can be conceptualized as a holistic approach to achieving sustainability of projects. They further propose an extension to the definition of sustainable development, arguing that the existing definitions seem to be vague (Wang, Wao, Wu, and Jiang, 2015).

Project managers are therefore important "change agents" in organizations that have a strong influence on the sustainability of organizations. However, the standards of project management fail to address the role project managers' play in realizing sustainable development and project managers are lacking the competences to consider the sustainability aspects of their projects. Although research stream on sustainability is gaining traction, especially, with climate change, there are still inconsistencies in the findings. The objective of this study, therefore, was to undertake analysis and synthesis of theoretical and empirical literature on the relationship among the variables: project manager's competencies, project performance, project manager's certification, and sustainability of public projects.

1.1. Statement of the Problem

Developing countries engage in projects such as building of roads, dams, plants, pipes, industries, theatres, e-government services, telecommunication and ICT, among others. These projects face several setbacks such as abandonment (Kumar and Best, 2006), cost deviation (Kaliba et al., 2009; Aziz, 2013), schedule deviation (Sweis et al., 2008; Fallahnejad, 2013; Marzouk and El-Rasas, 2014), scope deviation (Liu et al., 2011) and stakeholders' dissatisfaction (Ahonen and Savolainen, 2010). Public sector projects in developing countries deal with issues that are unique to the environment including large number of stakeholders, weak procurement systems, complex processes, shortage of skills

&resources, and bureaucratic red tape. Other environmental complexity factors that can affect project performance includes market conditions (competition in market, stability in pricing of raw material and exchange rate), stakeholder dependencies, political influence which causes delay in decision making, time and cost overruns and problems in hiring of project implementation staff, (Ahsan &Gunawan, 2010).

Kenya being a developing country faces a myriad of challenges in her public sector projects. Public procurement related malpractices were estimated to have cost the country over Kshs.700 billion (Mars Group, 2011). According to PWHC (2009), over 50% of public entities in Kenya do not comply with procurement rules and regulations. Furthermore, over 90% of the cases being investigated by Ethics and Anti Corruption Commission (EACC) are procurement related (Oanda, 2013). The NSSF Tassia II Estate, Standard Gauge Railway, and the NHIF Civil Servants Scheme projects are among the projects that have dominated the media for procurement malpractices (Gichio, 2014). Controller of Budget also reports a lot of controversies in the county governments (COB, 2018).

Projects in Kenya have continued to perform poorly in terms of sustainability and have been poorly rated on sustainability by the Operations Evaluation Department (OED) of the World Bank as compared to other East African countries, (Sang, 2015). It is in this context that the research will seek to examine key competencies of a project manager that influence sustainability of public sector projects in Kenya.

2. Theoretical Review

This section presents a discussion on the theories that have predictions on the relationship among the variables under investigation in the current study. The theories include participation theory, and social capital theory. The theories have been reviewed based on their assumptions, predictions on the interactions among the variables under examination, and their limitations.

2.1. Participation Theory

One of the pillars of project sustainability is participatory approach to the project management. Participation theory by Arnstein (1969) is therefore relevant for this study. The theory of participation defines stakeholder participation, and particularly in the public sector, as: "The redistribution of energy that empowers the have-not residents, directly avoided from the political and monetary procedures, to be intentionally incorporated into 'what is to come'. It is the procedure by which the less wealthy participate in deciding how data is shared, objectives and approaches are set, charge resources are distributed, programs are worked, and benefits like contracts and support are divided. To put it plainly, it is the methods by which they can prompt huge social change which empowers them to partake in the advantages of the princely society'. In this meaning of public participation and in light of public sector project management, the most vital point might be the level of energy dispersion. Public participation does constitute association in arranging forms, as well as the more undefined term of municipal ideals 'as the benefit of everyone, an aftereffect of individuals taking an interest together in a common undertaking which they see to be significant' (Arai &Pedlar, 2003).

Dynamic inclusion by community residents gives a view of living in a brought together community as those included offer a shared objective with the end goal that, even the individual occupant who is not a dynamic member, would at last benefit from the expanded community harmony. Public participation is considered a ladder that has eight levels, which are classified in three categories: non-participation; tokenism and citizen power, relative to authentic citizen participation. Non-participation is described as the lowest rungs, and is characterized by manipulation and therapy that allow those in power to educate or cure participants. Sheer provision of information and framework for consultation in public project management, and placation are considered hallmarks of "token" gestures that provide only minimal input at best without changing the system of decision-making (Arnstein, 1969).

At the higher ranks of partnership and delegated power, participants have an opportunity to make decisions alongside the traditional power holders. At the highest level (citizen control), participants have gained full authority for decision making. Under this typology, participation is isolated onto three classes, namely: 'Non-participation', 'Degrees of Tokenism' and 'Degrees of Citizen Power'. Non-participation portrays activities that at first glance appear to be a type of open participation. The real motivation behind this kind of participation is for organizers to disclose their free choices to the partners who had no information. The following class is Degrees of Tokenism depicted as types of participation in which partners were permitted to voice their interests however have no energy to impact the choices that were being made. The last class is Degrees of Citizen Power where contribution of this write gives the partners the capacity to voice their interests as well as to impact specifically the choices being made (Arnstein, 1969). Arnstein's participation ladder is valuable not exclusively to distinguish the present level of community participation, yet in addition to characterize the means required to advance more prominent contribution.

According to Reid (2013) the ladder helps in understanding the prioritization of projects in the public sector. Genuine public empowerment ought to be gotten continuously, by means of the greater part of the procedures of accomplishing complete power, up to the best end of Arnstein's stepping stool. In applying this idea to project management, such empowerment would stipulate that the citizen priorities should form the basis of project selection and management criteria since this is considered critical cannon of project sustainability in the public sector (Timothy, 2017). The limitation of participation theory lies in its over-simplification of the public participation cannon. It is not cognizant of the challenges of heterogeneity of the population from whom involvement is to be sought for purposes of project sustainability.

2.2. Social Capital

Social capital is a relatively new concept in the field of project management. Due to the spontaneous growth in many developing countries in which social capital plays a crucial role in project growth and hence economic growth, it is worthwhile to discuss the concept and its relevance to public project sustainability (Arnstein, 1969). Drawn from social science, the concept of social capital has gained prominent position in the sustainability discourse, and appears to have objective and subjective arguments. The objective incorporates the power of associational connections or exercises, systems, rules, parts, points of reference, and alludes to what individuals do. While, the subjective segment has to do with standards, values, convictions, states of mind, correspondence and trust, and identifies with what individuals feel (Jones, 2005). Three sorts of connectedness – holding, crossing over and connecting – have been distinguished as essential social systems inside, between and past communities (Pretty, 2003).

In countries where social capital is high and entrenched, individuals have a tendency to have more certainty to put resources into aggregate commitment and cooperation, assuming that others would do as such as well, thereby contributing to economic sustainability of public projects (Pretty, 2003). To build public trust in project management as a sustainability strategy, correspondence is required. From the foregoing, four dimensions of social capital emerge, namely: relations of put stock in, correspondence and trades, basic tenets and standards, and connectedness in systems and gatherings (Pretty, 2003). Others such as Abbasianjahromi et al. (2018) contend that a superior comprehension of social capital is vital for giving a possible method to create sustainable public projects. It has been proposed as the “missing link” being developed and is often seen as vital for sustainability of public projects (Jones, 2005). The integration of these models allows for the horizontal and vertical levels of public participation in project management as a strategy for sustainability. The limitation of social capital theory rests in its assumption that social capital must always be sought for a project to be sustainable in the public sector. This assumption does not acknowledge the unique settings such as the military projects that are often shielded from public scrutiny. Such projects still report remarkable levels of performance, and hence sustainability.

3. Empirical Review

This section presents a discussion on the definitions of various concepts forming the basis of this study. The concepts discussed in this section are: project manager’s competencies; project performance; project manager’s certification; and project sustainability. Various perspectives of each concept have been examined, highlighting key strengths and limitations

3.1. Project Manager’s Competencies

The Project manager’s daily activities include management of the project scope, time, risks, cost, quality, and relationships with suppliers, among others. It is therefore necessary for the PM to have technical skills as well as team management and negotiation skills, financial acumen, and business skills, combined with an understanding of organizational policy, to meet the project objectives while striving to achieve or exceed stakeholder expectations. Project management professionals must have behavioral and professional skills that are compatible with the function. Their role is unique in public sector projects which always deal with multiple, different stakeholders whose opinions can strongly influence the project hence an increasing need for developing competences for public sector project managers. In addition, public sector project managers work in an environment which is not familiar with results-oriented project management, constantly dealing with political interference in the management of projects and the challenges of working with political appointees. Sherein (2014) views competencies as individual dispositions that include cognitive, affective, volitional and motivational elements; the interplay of knowledge, capacities and skills, motives and affective dispositions.

Project manager competencies in sustainable development projects can be classified in two categories: self- and continuous competencies. Sustainability requirements cover both self and continuous competencies in an effort to create a complete set of sustainability competencies. Self-competencies facilitate self-organized action in various complex situations and include: strategic planning, systems thinking, PM, financial analysis, risk assessment, sustainability accounting and reporting management, technology and/or engineering expertise, and process management. Continuous competencies on the other hand, are acquired during action on the basis of experience and reflection (Rieckmann, 2012); they encompass communication with stakeholders, problem solving, inspiration and motivating others, flexibility or adaptability, team building or collaborating, influencing change within project, establishing and managing trinities, consensus building, innovating/re-thinking the business, facilitating and/or training groups, networking with external/internal stakeholders, and influencing change outside the project. These elements have been identified in more than one study because they are crucial to the process of implementing sustainability within projects and building the business case for project sustainability (Bodea et al., 2010)

Wiek (2010) viewed competencies in sustainability as “complexes of knowledge, skills, and attitudes that enable successful task performance and problem solving with respect to real-world sustainability problems, challenges, and opportunities.” Bodea et al. (2010) distinguished between the components of PM competencies in sustainable development projects, including knowledge, skills, personal attitude, and experience, and the categories of PM competencies, including technical, contextual, and behavioral competencies, which is in line with the PMCD (2007) and IPMA (2006) Frameworks. Interest in the role of the project manager and aspects of competence in that role can be traced back to the mid twentieth century. Since then, much has been written in project management texts about what it takes to be an effective project manager, culminating with Frame’s work on Project Management Competence published in 1999. The concept of “competency” can be defined as the portfolio of skill sets that a person that enables him to perform a task. A project manager’s competency, therefore, refers to the mix of skills that discriminates a “good” from “bad” project

manager. This definition is the most dominant in project management literature (Sohal, Hawas&Fildes, 2019). With the rise in the number of studies focusing on the concept of project manager's competencies, as one of the critical project success factors, the notion of project management competence draws primarily upon the opinions of project managers and others concerning the knowledge, skills and personal attributes required by effective project personnel, based on critical incident interviews. Majority of scholars in project management discipline appear to relate the concept solely to personal attributes with identification of six behavioral competencies that distinguish outstanding project managers from their peers (Agyekum-Mensah, Knight and Coffey, 2012).

There is concurrence among majority of scholars that there are a set of skills that account for the significant differences indicated between outstanding and average performers. Nevertheless, they propose that this argument should be put to context due the variations in project settings. Despite the contextual variations in the conceptualization of project management competencies, some skill-sets transcend contextual boundaries due to the rate at which they feature in project management literature worldwide (Crawford, 2017). Table 1 is a summary of the project management competencies that dominate literature, with a clustering of the key factors in the literature in the period before and after the year 2005, and identification of common factors.

Common Factors	Pre 2005 Factors	Post 2005 Factors
Leadership Planning (Integrative) Team Development	Leadership Planning (Integrative) Strategic Direction Team Development Technical Performance	Leadership Monitoring & Controlling (Integrative) Planning (Integrative) Team Development Communication
Communication Technical Performance	Communication Decision Making & Problem Solving Stakeholder Management (Parent Organization)	Stakeholder Management (Parent Organization) Technical Performance Organization Structure Project Definition
Organization Structure Stakeholder Management (Parent Organization)	Monitoring & Controlling (Integrative) Monitoring & Controlling (Cost) Monitoring & Controlling (Scope) Monitoring & Controlling (Time) Organization Structure Stakeholder Management (Client) Team Selection	Administration Stakeholder Management (Client) Stakeholder Management (Other) Decision Making & Problem Solving Monitoring & Controlling (Cost) Planning (Specialist - Cost) Planning (Specialist - Time) Strategic Direction
Monitoring & Controlling (Integrative)	Administration Monitoring & Controlling (Risk) Planning (Specialist - Time) Project Definition Stakeholder Management (Other)	Team Selection Closing (Integrative) Monitoring & Controlling (Quality) Monitoring & Controlling (Risk) Monitoring & Controlling (Scope)
Decision Making & Problem Solving Monitoring & Controlling (Cost) Planning (Time)	Closing (Integrative) Monitoring & Controlling (Quality)	Monitoring & Controlling (Time)

*Table 1: Project Manager Competence Identified in the Literature – Ranked by Frequency of Mention
Source: Crawford (2017)*

From Table 1, it is evident that leadership, a factor that relates almost exclusively to personality characteristics or personal attributes, appears consistently in the highest-ranking category amongst project manager competence factors, whereas it appeared no higher than the second ranking category for project success factors (Guo et al., 2014). Similarly, team development appears consistently in the first ranking category for project manager competence factors, but fell as far as fourth ranking in one case for project success factors. Communication and technical performance are consistently stronger for project manager competence than for project success factors (Ferreira et al., 2015).

Planning (Integrative) is clearly a strong factor, as it appears consistently in the first ranking for both project success factors and project manager competence factors (Yu & Yang, 2018). It is also evident that the increased ranking of monitoring and controlling (Integrative) that appears in the post 2005 studies of project success factors is supported by

post 2005 studies of project manager competence factors indicating an increased concern for control (Behera et al., 2015). It is clear from the review of literature that diverse competencies are required of a successful project manager, and that those factors seem to transcend time and space.

3.2. Project Performance

A project refers to a non-routine, complex, one-time endeavor that is limited by budget, time and assets as well as expected performance standards developed to gratify the needs of clientele. A project is normally accomplished via an aggregate of several interactions and events, premeditated or spontaneous (Tan, 2015). Performance, on the other hand, refers to the extent to which an entity meets its pre-set objectives after execution of various activities. Project performance refers to the extent to which a set of pre-determined activities actually meet their objectives over time. Project performance measures are undertaken to provide information to managers in order to exert control over the project. Those measures must be appropriate to the organizational level that can immediately effect change based on information it learns in order to control the performance of the project at hand (measuring the earned value of the project will provide information on the performance of the project to allow managers to make critical decisions to bring the project to closure successfully). These measures must be collected fairly often, perhaps even weekly, depending on the duration of the project (Behera et al., 2015).

In measuring value, decisions made to implement change (project management improvement initiatives) are evaluated to ascertain value addition to the organization (Abbasianjahromi et al., 2018) rather than performance (which may or may not be the same). Sometimes (usually) improved performance can be translated into value. For example, improving schedule performance for all projects over a period of a year can be translated into improvement in average project cycle time, which can be translated into improvement in time to market, which can add significant value to the organization. Value measures, therefore, provide information on the performance of the organization rather than the performance of a project (Chan & Oppong, 2017). Information must be collected over a longer period of time (no more than quarterly) and across a portfolio of projects. There is no single set of measures that universally applies to all projects. The appropriate set of measures depends on the strategy, technology, and the particular industry and environment in which the project is being undertaken. However, the measures should normally be indexed over a large number of similar types of projects over a period of time (Abbasianjahromi et al., 2018).

Return on investment is considered the most appropriate formula for evaluating project investment (and project management investment) is Net Benefits divided by Cost. The key to this metric is in placing a dollar value on each unit of data that can be collected and used to measure Net Benefits. Sources of benefits can come from a variety of measures, including contribution to profit, savings of costs, increase in quantity of output converted to a dollar value, quality improvements translated into any of the first three measures. Costs might include the costs to design and develop and/or maintain the project or project management improvement initiative, cost of resources, cost of travel and expenses, cost to train and overhead costs (Dilio, 2012).

Productivity is output produced per unit of input of a project. A straightforward way to normalize productivity measurement across projects is to use revenue per employee as the key metric. Dividing revenue per employee by the average fully burdened salary per employee yields a ratio. This ratio is the average-per-employee "Productivity Ratio" for the organization as a whole. Other productivity metrics might be number of projects completed per employee, number of lines of code produced per employee. The key to selecting the right productivity measures is to ask whether the output being measured (the top half of the productivity ratio) is of value to your organization's customers (Chan & Oppong, 2017).

Cost of quality is the amount of money a project loses because its design was not done right in the first place. It includes total labor, materials, and overhead costs attributed to imperfections in the processes that deliver products or services that don't meet specifications or expectations. These costs would include inspection, rework, duplicate work, scrapping rejects, replacements and refunds, complaints, loss of customers, and damage to reputation (Behera et al., 2015). Cost Performance Index (CPI) is determined by dividing the value of the work actually performed (the earned value) by the actual costs that it took to accomplish the earned value. The ability to accurately forecast cost performance allows organizations to confidently allocate capital, reducing financial risk, possibly reducing the cost of capital. CPI Standard deviation is an even better metric, one that shows the accuracy of budget estimating.

Schedule Performance Index (SPI) is the ratio of total original authorized duration versus total final project duration (Tan, 2015). The ability to accurately forecast schedule helps meet time-to-market windows. SPI Standard Deviation is an even better metric that shows the accuracy of schedule estimating. Despite their generic applicability in the measurement of project performance, each of the measurement criterion has inherent weaknesses mainly because projects vary in terms of their length, objectives, funding, stake-holding, hence their performance cannot be measured using generic measures. This opens a window for continuous development of project performance measurement indices by scholars and provides impetus for continued research (Collinge, 2016).

3.3. Project Manager's Certification

The concept of certification has limited formal and explicit definition from academic sources. There is, nevertheless, implied construal of certification as a formal evidence of academic or professional achievement, normally issued by academic and professional institutions. Project manager's certification, therefore, can be conceptualized as a formal attestation of academic or professional achievement by a project manager. In this regard, a project manager either possesses certain academic or professional certifications or otherwise (Tennant & Fernie, 2014).

Certification has become not only a way to standardize knowledge but also to gain recognition for organizations and individuals. Rules of the Project Management profession and Certification in that field is not a preserve of a single

organization hence there are no formal rules that would prevent a person from being a project manager, even if they lack the appropriate certificate. Some government authorities or major companies may require sub-contractors to assign their projects to managers with PMI or IPMA certification. Certification may serve as an instrument to create a career path for project managers in larger organizations. Nevertheless, professional recognition for project managers may take time to reach the level of auditors, lawyers or doctors. The two best-known certifying bodies in Project Management are PMI and IPMA, though there are more specific ones, such as Prince2 and internal corporate certifications, Markus et al (2012)

In the widely formal world of project management, some certifications are often deemed important and would be the major discriminant in the recruitment and selection of a project manager. About 97% of organizations believe that good knowledge of project management is critical to organizational success. Unfortunately, barely over half of the project managers are certified and skilled in their tenure and career in the project management domain (Ferreira et al., 2015). There is limited conceptual and even empirical literature on project manager's certification, with most sources of literature agglomerating the discussion with project manager's competence. This apparent ambiguity in conceptualization of project manager's certification provides an opportunity for scholars in the field of project management to further their academic interest.

3.4. Sustainability of Projects

Gravelman and Kluiwstra (2010) define project sustainability management as "the discipline of planning, controlling and organizing resources, time and quality to complete a project successfully" The World Bank views project sustainability as "the ability of a project to maintain an acceptable level of benefit flows through its economic life, Sherein, (2014). One of the most widely used definitions of sustainable development states that sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 2014). And although about half of the publications reviewed in this study do not explicitly provide a definition of sustainability or sustainable development, 28% of the publications refer to the definition of the World Commission on Environment and Development as a common conceptual starting point.

In their interpretations of sustainability, the publications sampled in this review refer most often (86%) to the 'triple bottom line' or 'Triple-P (People, Planet, Profit)' conceptualization of sustainability (Yu & Yang, 2018). The publications, however, differ in their consideration of the different 'P's. 96% of the publications mention an economic dimension, 89% mention a social dimension, and 86% mention an environmental dimension. Papers that focus on sustainable or 'green', construction projects and project management mostly discuss the combination of the economic and the environmental dimensions, whereas those that focus on sustainable development projects tend to discuss mainly the social dimensions. This notwithstanding, several publications in the sample consider more dimensions or 'principles' of sustainability that are relevant to project management. For example, Gareis, Huemann, Martinuzzi, Sedlacko & Weninger (2011) define sustainability with the principles: economic, social and ecologic orientation; short-, mid- and long- term orientation; local, regional and global orientation; and value orientation. The last dimension, value orientation, refers to sustainability as a normative concept that requires specific values underpinning the attitudes and behavior of individuals. This dimension can also be found with Huemann (2013). Other dimensions or principles of sustainability that are mentioned include risk reduction (Goedkneigt, 2012), transparency (Silvius et al., 2012), and performance (Craddock, 2013). These dimensions provide additional insight as to how sustainability is considered in the context of project management. From the foregoing, the concept of "sustainability", and hence "project sustainability" is multidimensional, it has diverse parameters, all that ought to be considered in the project management.

4. Discussion

This section presents a discussion on the prior empirical studies on the variables under investigation in the current study. The studies have been reviewed with focus on the author(s), thrust of the study, the country of origin, philosophical paradigm, and inherent weaknesses, which constitute the knowledge gaps. The knowledge gaps are conceptual especially where there are conflicting findings of similar studies, contextual where the focus was on a different country from Kenya, and methodological where the epistemological paradigm, research design, sampling design, instrumentation, data collection, and analytical methods do not meet the threshold set by this review.

A study by Silvius and Schipper (2014) was conducted on the premise that sustainability is one of the most important challenges of twenty first century, with emerging literature providing strong indications that sustainability impacts project management processes and practices even though standards for project management had failed to address the sustainability agenda. The study was based on a review of prior empirical investigations, utilizing phenomenological paradigm and was done in Netherlands. According to the study, considering sustainability implies, first, a shift of scope in the management of projects: from managing time, budget and quality, to managing social, environmental, and economic impact. Secondly, it implies a shift of paradigm of project management: from an approach that can be characterized by predictability and controllability, to an approach that is characterized by flexibility, complexity and opportunity. Thirdly, the study determined that considering sustainability implies a mind shift for the project manager: from delivering requested results, to taking responsibility for sustainable development in organizations and society. The study was exclusively conceptual since no primary data was collected and subjected to the rigors of analysis. The study was also done in more developed country with different culture.

Goedkneigt and Silvius (2012) posits that project management practice must embrace sustainability in order to develop into a 'true profession'. This was founded on the basis that in project management, sustainability could be gained in both the product of the project and in the process of delivering the product. The study was done in the Netherlands and

was underpinned by phenomenological paradigm, and used case study design. Nine sustainability principles were developed by the study namely: values and ethics; holistic approach; long term view; large scale; risk reduction; participation; accountability; transparency; and stakeholder interest. In a case study it is researched which project and program management roles can exert an influence to the sustainability principles have implemented in the project management practice and how they can accomplish this implementation. Not only was the study done in a developed nation context but the research design could not allow generalization of findings.

A study by Agyekum-Mensah, Knight, Coffey (2015) was of conceptual in nature and explored the role and function of project management in the achievement of sustainability in the built environment by developing a 4Es (Economic, Effectiveness, Efficiency and Ethics) and 4 Poles (Economic, Social, Environmental and Technology) model of sustainability. The study also identified that the existing debates on sustainability seem to marginalize project management's positive contributions to sustainable construction, as well as the importance of technology in the sustainability agenda. The study was done in the United Kingdom and was underpinned by phenomenological paradigm. The study was exploratory in nature and it established the importance of technology in the sustainable development agenda. The study proposed a 4Es (project management model) and 4 Poles (poles or factors of sustainability) model as a holistic approach to achieving sustainable construction. In addition, the study proposed an extension to the definition of sustainable construction or development, as the existing definitions seemed to be vague. The study focused only on the construction sector; hence its findings may not be generalized to other sectors of the economy due to their uniqueness. The study was also done in a developed nation context.

A study by Nahyan, Sohal, Hawas, Fildes (2019) aimed to examine four key management processes, namely, communication, coordination, decision-making and knowledge-sharing, to determine how these impact on transportation infrastructure project success. The context for this study is the construction of a major highway in the United Arab Emirates. Multiple sources of data were used in this case study that included the following: examination of various documents relating to the project in question; interviews with ten key stakeholders involved with the construction of the project; observations made during the site visit and interviews conducted with four site engineers; a focus group conducted with six key stakeholders involved in the project; and finally interviews conducted with the Minister of Public Works and the Director-General of the Ministry of Public Works. Data analysis was conducted using NVivo and the study determined that identification and involvement of key stakeholders, particularly in the early phases of a construction project, is found to be highly critical. Managers must develop detailed understanding of stakeholders' influence in terms of their legitimacy, power and urgency in achieving effectiveness of the management processes. Although the study edged closer to examination of the public projects, it was exclusively done on the construction sector, and no third variable was studied.

5. Recommendations and Conclusions

The objective of this study was to undertake a critical analysis of literature on the effect of project manager's competence on sustainability of public projects in Kenya. The study also involved a review of literature on the effect of third variables, namely project management certification and project performance. Majority of scholars, however, concur that there are a set of skills that account for the significant differences indicated between outstanding and average performers. No study was particularly identified that investigates the mediating and moderating effect of variables on the relationship between project manager's competencies and sustainability of public projects in Kenya, with the concept of sustainability attracting diverse definitions among scholars.

It is therefore necessary to study an empirical model on the relationship between project manager competencies and sustainability of public sector projects. This study proposes project manager's competencies to be modelled as an independent variable, sustainability of public sector projects as a dependent variable while Project manager's certification and project performance as moderating and mediating variables respectively. A positivist epistemological paradigm is suggested since the predecessors have heavily been skewed towards phenomenological approach. The study further proposes that study populations can be drawn from various sectors of the Kenyan economy: infrastructural projects; educational projects; tourism projects; mining projects; water and sanitation projects; agricultural projects or energy projects. A successful empirical investigation on the phenomenon in this conceptual review will contribute to the development of the project management discipline and provide solutions to the practice of project management in Kenya. This study will contribute theoretically in the field of project management to further develop training programs and academic curricula tailored to the needs of public sector employers. Practically, the outcomes of this research will provide criteria for selection of top managers for public projects to realize sustainability of these projects. On societal level this study may assist Government institutions in formulating rules and regulations that govern Project Management certifications needed to improve the project performance.

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