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DETERMINANTS OF SUCCESSFUL IMPLEMENTATION OF INFRASTRUCTURE PROJECTS IN DEVOLVED UNITS IN KENYA: A CASE OF KILIFI COUNTY, KENYA

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Abstract: **Infrastructure implementation at the grassroots level has been neglected over the years thus putting more pressure on the already available infrastructure. The foundation for growth of a place hinges on the quality of infrastructure development of the area. Quality infrastructure with good maintenance attributes to improved trade, better transport and communication, improved education and socio-economic status, better healthcare and by extension improve living standards of the citizenry. This in turn contributes to economic growth and development of the devolved units and by extension the whole country. To this end therefore, implementation of infrastructure projects and specifically the determinants of success in its implementation is worth examining. The purpose of the study was to examine the determinants of successful implementation of infrastructure projects in Kilifi County, Kenya. The study was guided by four objectives. Objective one was to determine the influence of budgetary allocation on the successful implementation of infrastructure projects. Objective two was to examine the influence of stakeholder participation on the successful implementation of infrastructure projects. Objective three was to assess influence of human resources on the successful implementation of infrastructure projects and finally, to establish influence of project design and specification on the successful implementation of infrastructure projects. The study targeted a population of 738 and a sample size of 259 respondents. Descriptive research design method was applied. Data collection was achieved through the use of a questionnaire and a pilot test for the questionnaire was conducted in the neighbouring Tana River County to enhance reliability of the instrument. In conducting the study, a total of 259 questionnaires were administered. Hypothesis was tested by use of chi-square. Of the administered questionnaires, 133 were retuned representing a response rate of 51.35%. The male respondents were the dominant ones at 74.4% (99) compared to their female counterparts at 25.6% (34). Findings of the study reveal that majority of respondents 115 (86.47%) significantly supported the idea that adequate budgetary allocation influences successful infrastructure project implementation. 123 respondents representing 92.48%, were in agreement that stakeholder participation influence the successful implementation of infrastructure projects. Similarly, 102 respondents equaling to 76.69% of respondents, supported the proposition that human resources influence the success of infrastructure projects. Finally, a majority of respondents are in agreement to the idea that project design and specifications does influence the successful implementation of infrastructure projects 96 (72.18%). The researcher recommends for the timely release and accountability of budgeted funds to enhance successful completion of projects within time, involvement of stakeholders right from inception of project to foster project uptake, adequacy in trained and skilled manpower to enhance usage of emerging and modern technology in infrastructure project and appropriate feasibility studies on designs and specifications of infrastructure projects to ensure durability of infrastructure.**

Keywords: **Stakeholders, Stakeholder Participation, Infrastructure Projects, Successful Implementation, Infrastructure, Devolved Units.**

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1. INTRODUCTION

Lin-lin, Yang et al., (2014) noted that stakeholder participation especially by the public is still relatively low despite immense efforts to actively enhance public participation in infrastructure development. They proposed strategic plans geared towards removing the bottle necks in active stakeholder participation to promote infrastructure development. Strategies that have been put forward include operationalizing an overall public participation objective; ensuring institutions have guidelines and policies on participation; implementation of an operational framework for public participation and establishing a workable experience sharing scheme for participating groups and individuals. Certainly, the inclusion of such strategies would strengthen the participation of various stakeholders in implementation of projects.

Project commencement without elaborate education on the impacts or selection of a project is too risky an action. Ideally, an Environmental Impact Assessment (EIA) should be conducted to determine the effects of a project on the community and environment at large. However, at times the reports are so complex for the normal person to clearly understand. Various studies have postulated that involving stakeholders' right from the planning stages and profiling and involvement of stakeholders in infrastructure projects is essential if successful implementation is to be guaranteed. However, mere participation is not enough as stakeholders need to effectively engage in such forums. Developing countries, however, lack effective participation because of the lack of a culture of participative democracy (Manowang and Ogunlana, 2006). In their report, (Gandhi et al., 2006) strongly advocate for adequate support in terms of human resource, adequate funding, community mobilization and involvement for successful project implementation.

Infrastructure projects have been given high priorities in many developing countries because of the rapid population growth and urbanization being experienced in such countries (Iimi, 2005 and UN Habitat, 2010). Similarly, India with a huge population and an infrastructure need of about USD 492.5 billion, (Indian Planning Commission, 2007) has forced the Indian government to raise its infrastructure investments to approximately 8% of GDP up from 4% in its 11th Five Year Plan (2007 to 2011) to meet the ever-growing infrastructural demand (De, P., 2008). The World Bank (2015) argues that the availability of quality and efficient infrastructure influences the growth and productivity of a nation. For instance, the construction of schools, hospitals, carpeting of roads enhances the quality and safety of a nation's population. To thus ensure strong economic performance and to maintain a healthy economic growth which can firmly deal with the world's economic shocks, modernization and continuous improvement of infrastructure coupled with strong policy guidelines to protect the already available infrastructure and coming up with new developments is essential in achieving a strong economic frontier (Vives et al., 2006). Ngowi et al., (2006) point out to top-notch telecommunication network, adequate and reliable energy, safe drinking water as well as well-developed transportation network as major components of trade expansion both domestically and externally, attracting investors through Foreign Direct Investment (FDI) leading to future growth. These improvements will impact the long term social population growth. According to the World Bank (2017), any increase in infrastructure projects investment can lead to increase per capita GDP by approximately 2% in Sub Saharan Africa. This has been demonstrated by the volume of business already done, job opportunities created and increased investments in countries that have undertaken such infrastructure projects. However, since Infrastructure projects are generally capital intensive in nature and require full government support to realize them, the government needs to formulate strong macro socio-economic policies, build strong institutions and create an enabling, fair and competitive business environment free of the prevalent government red tape and corruption (Botswana National Development Plan).

Despite the shortfalls in funds available and the technical expertise to implement large infrastructure projects, tremendous achievements have been realized in the construction of infrastructure in Africa. Of note is the construction of the Addis-Djibouti High Speed Rail (ADHSR) and the Standard Gauge Railway (SGR) in Kenya (Gravito et al., 2017). This highlights the fact that with better organization, enabling regulatory framework and sound investment policies, adequate funds can be made available to construct more infrastructure projects of this magnitude thus opening up the continent for trade.

In a World Bank Africa survey report (2017), African governments have been urged on the need to create a robust and solid legal and regulatory framework towards guiding implementation of infrastructure projects. This will ensure that wastages and loss of resources because of pilferage, corruption and time overruns etc. are minimized. It's encouraging though to see other countries in Africa already on the forefront in coming up with sound policies towards ensuring smooth implementation of infrastructure projects. For instance, countries such as Rwanda, South Africa and Mauritius have created favourable environments for infrastructure development.

Development of infrastructure is one of the key pillars of Kenya's economic blueprint (Vision 2030). It envisages a country with a strong infrastructure framework to enhance acceleration and completion of infrastructure and raise the efficiency and quality of projects (GoK). In Kenya, the monies drawn from public coffers by counties has mostly been used for recurrent expenditure as opposed to a majority of it being channeled towards development of infrastructure. The Controller of Budget (CoB, 2015) report, indicate over expenditure by counties. To make matters worse, a higher percentage of the allocated funds are for recurrent expenditure, thus denying the residents of meaningful development. The report further paints out marginalized counties such as Mandera, Garissa and Wajir as the biggest spenders in development expenditure – meaning the fruits of devolution are being felt. Whereas adequate funds can ensure successful project implementation, other scholars point to other important indicators such as project identification and design, prudent resource management, inclusivity in stakeholder involvement, as points of successful infrastructure projects implementation (Ahsan and Gunawan, Ika et al., 2010).

The County Assembly of Kilifi, in the financial year 2014/2015, allocated 630.7 million Shillings and 247.5 million Shillings but ended up spending 551.8 million Shillings and 148.5 million Shillings on recurrent and development expenditure respectively (Auditor General's Report, 2016). The under absorption of these funds is attributed to poor management or the inability of management to fully utilize the budget as a planning tool. Therefore, community initiative in the drafting and implementation of infrastructure projects cannot be overlooked.

Turner and Müller (2005) also reveal crucial demotivational factors which equally affect the productivity of infrastructure construction project managers. Factors such as inadequate financial compensation, material shortages, change of specifications and project scope, shortage of skilled personnel have acted as impediments to the smooth implementation of infrastructure projects with projects coming to a halt or failing to take-off completely. Majority of the stakeholders in Kilifi County have time and again raised concerns (some even threatening to dispose of their investments and quit) on the poor status of the available infrastructure leading to business losses. Abandonment of projects at some stage of implementation is a common feature largely attributed to delayed payments to contractors (Okero, 2011). Such problems have been a persistent topic by investors and contractors. For instance, the implementation of Dagamra Irrigation Scheme which failed to take-off, Construction of Kilifi mortuary which stalled because of non-payment of contractual fees among other projects. Moreover, nothing much seems to have been done to remedy the situation thus prompting the researcher to undertake this study.

2. RESEARCH PROBLEM

Infrastructure development is an industry that turns infrastructure ideas into physical reality – contractors, engineering firms, hardware suppliers. (Stern School of Business; New York University, 2016). The Government of Kenya has undertaken a considerable number of infrastructure projects geared towards ensuring economic growth and development within the country. The World Bank argues that a majority of developing countries' economic growth is hinged on the success of infrastructure projects. Infrastructure Projects contribute to high productivity and industrialization which in turn fosters trade. With infrastructure projects in place, job opportunities especially for the majority youth are created thus reducing crime rate and other social evils. Poverty alleviation which is a key principle in attaining the Sustainable Development Goals (SDGs), is easily achievable with the provision of basic and social infrastructure such as safe and clean water, health facilities, educational facilities etc. Benefits accruing from successful implementation of infrastructure projects can become a reality if the necessary mechanisms, policies and frameworks have been put in place. Many middle-income countries have endeavored to achieve this by ensuring adequate allocation of funds towards development expenditure. Easterly and Rebelo (1993) assert that public infrastructure forms a large fraction of both total and public investment in developing countries. Active involvement of stakeholders and strict monitoring and adherence of project guidelines coupled with incentives provided by such countries can enhance successful project implementation.

Devolution was envisaged to bring development and services closer to the people and ensure voters expectations, dreams and aspirations become a reality. Waihenya (2011) argues out that despite creation of task forces to come up with guidelines, policies and legislation by county assemblies, National Assembly and Senate, projects failure is still a common phenomenon across counties with projects cost and budget overruns still being experienced. For instance, in Kilifi County, projects that have stalled or failed to commence include the Dagamra Irrigation Scheme, Kakuyuni Street Lighting Project and the Construction of Kilifi Mortuary despite huge investments being made and contractors having already started construction work. It is on this background that this study seeks to examine the determining factors in successful implementation of infrastructure projects in Kilifi County.

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3. OBJECTIVE OF THE STUDY

3.1 Purpose of the Study:

The purpose of the study was to examine the determinants of successful implementation of infrastructure projects in devolved units in Kilifi County, Kenya.

3.2 Objectives of the study:

The objectives of the study were:

i. To determine influence of budgetary allocation on the successful implementation of infrastructure projects in Kilifi County, Kenya.

ii. To examine influence of stakeholder participation on the successful implementation of infrastructure projects in Kilifi County, Kenya.

iii. To assess influence of human resource on the successful implementation of infrastructure projects in Kilifi County, Kenya.

iv. To establish influence of project design and specification on the successful implementation of infrastructure projects in Kilifi County, Kenya.

4. RESEARCH QUESTIONS AND HYPOTHESES

4.1 Research Questions:

To achieve the stated objectives, the following research questions were asked.

i. To what extent does budgetary allocation influence the successful implementation of infrastructure projects in Kilifi County, Kenya?

ii. To what extent does stakeholder participation influence the successful implementation of infrastructure projects in Kilifi County, Kenya?

iii. To what extent does human resource influence the successful implementation of infrastructure projects in Kilifi County, Kenya?

iv. To what extent does project design and specification influence the successful implementation of infrastructure projects in Kilifi County, Kenya?

4.2 Research Hypothesis:

The study was guided by the following hypotheses which were tested at the 95% level of significance.

i. H_0: There is no significant relationship between budgetary allocation and successful implementation of infrastructure projects.

H_1: There is a significant relationship between budgetary allocation and successful implementation of infrastructure projects.

ii. H_0: There is no significant relationship between stakeholder participation and successful implementation of infrastructure projects.

H_1: There is a significant relationship between stakeholder participation and successful implementation of infrastructure projects.

iii. H_0: There is no significant relationship between human resource and successful implementation of infrastructure projects.

H_1: There is a significant relationship between human resource and successful implementation of infrastructure projects.

iv. H_0: There is no significant relationship between project design and specification and the successful implementation of infrastructure projects.

H_1: There is a significant relationship between project design and specification and the successful implementation of infrastructure projects.

5. JUSTIFICATION OF THE STUDY

The findings of the study will help the county government of Kilifi, other counties and private sector in formulation of guidelines, manuals, frameworks, policies and strong institutional mandates or a review thereof. This can then be incorporated during project proposal stages to enhance uptake and successful delivery of infrastructure projects.

Scholars and other academicians can use the findings as a basis for further research, besides being a contribution to the body of knowledge by supplementing the already existing literature.

The Government of Kenya being the major promoter of infrastructure projects through its parastatals, agencies and ministries can use the findings for future planning on infrastructure projects by closely examining the determinants of success of infrastructure projects.

6. REVIEW IF LITERATURE

6.1 Review If Literature:

6.1.1 Role of Infrastructure Projects in Economic Development:

Economic development and its association to infrastructure can be traced to many centuries ago. During the Agrarian Revolution in Mesopotamia, the harvest was plenty, and the population kept on increasing. This necessitated for urgent measures such as the building of roads, hospitals, storage facilities, recreational centres, schools and markets (PMI, 2012). Just like those ancient times, infrastructure has become more critical now than before and forms the backbone of growth to any economy.

According to DFID (2012), sustainable growth can be achieved with proper investment in infrastructure. Benefits of investment in infrastructure like employment, good housing, and affordable health care and excellent educational facilities lead to an improvement of the living standards of the people. Njoro (2016) advocates for strong infrastructure network to increase the competitiveness of a country. In Kenya, with the ever-growing population and the mushrooming of towns and urban centres because of devolution, the construction of infrastructure can spur up growth in these towns and the entire country (Frank, 2006). Since the inception of devolution in 2010, major milestones have been achieved economically. Tarmacking of roads, drilling of boreholes, construction of hospitals, educational centers, building of recreational facilities has spurred up growth of the economy in these towns. However, an imbalance in economic growth still exists between the counties

Industrialization and trade can be fast tracked by ensuring adequacy in the infrastructure of a place. Mbekeani (2007) alludes that economic powerhouses such as the USA are well ahead because of trade. Infrastructure ensures easier and faster accessibility of both local and export markets, communication is made simpler for instance with the advent of mobile phones and computers, the world has become a global village. Goods can be bought or sold online and not necessarily having to travel long distances to tie down business deals (Deng, 2013). For a country benefit from this booming trade, state of the art infrastructure must be in place.

AfDB (2011) points out that the field of infrastructure development has been given much attention on the African continent. This is in a bid to increase competitiveness for the markets and produce from the region and in order to attract FDIs. Regional blocks such as COMESA and EAC have come up with joint infrastructure projects geared towards unlocking their economic potential. The LAPPSET project corridor is one of the key infrastructure for unlocking the arid and land locked countries such as South Sudan, Rwanda, and Uganda etc. Once completed, this will be a fortune changer to the people of region as it will open up borders and provide ready market for goods and services and also allow convenient movement across the borders.

Infrastructure development is synonymous to other social and economic benefits. For instance the construction of Thika Super Highway and the SGR in Kenya, created job opportunities either directly or indirectly, created business opportunities since business were opened along the corridors of these infrastructural projects, some towns which had been forgotten all over sudden awoke and are now experiencing booming business courtesy of such projects. (Kenya Railways Corporation, 2017). This has a ripple effect on the economy and adds to the GDP of the country hence economic development.

6.1.2 Adequate Budgetary Allocation and Successful Implementation of Infrastructure Projects:

Budgetary allocation is the process of setting aside funds for projects that have been earmarked for implementation in a given fiscal period. Monyoncho, (2015) asserts that adequate funding is umbilical to projects success in devolved units and thus counties need to adequately allocate funds during budgeting for infrastructure construction. One of the criteria for project success is that it must be on budget (Pinto and Slevin, 1987). However, some projects fail these criteria (Barnes, 2008). Mugambi and Theuri (2014) note that budget preparation procedures are adhered to by organizations but to some extent influenced by politics and poor public participation. Similar studies by (Manowang and Ogunlana, 2016) also agree to this argument but also advocate for public views to be incorporated into the final budgets. In some instances, however, public views have been ignored hence reducing the willingness and morale of the public to participate in such forums.

The quality and reliability of infrastructure is fundamental to the funding agencies and are critical constraints in most countries. Among the High and Middle-Income Countries (HMICs), access to infrastructure is almost a guarantee. Most (97% and 99%) of Chinese and Russians for example have access to electricity (World Bank, 2014). Thus, such countries put more emphasis on the quality and reliability of existing infrastructure projects to improve competitiveness and economic development. As a result, therefore, maintenance of such infrastructure gets good budgetary allocation to maintain its status. On the other hand, developing countries have invested little in development of infrastructure compared to the rate of population and economic growth. An infrastructure investment of about 5.5% of annual GDP is optimal to keep in touch with the rate of growth in these countries. However, only a paltry 2% to 4% of GDP is currently being invested in infrastructure (World Bank, 2014). The same report further narrates that many governments within East Asia region are investing relatively more than their Latin America counterparts who are investing as little as 1.6% of GDP on average. The African contest though, with majority of the infrastructure needs; investment is currently at 2% to 3% of the annual GDP. This clearly indicates that with continued low investments in the infrastructural framework, economic stagnation and unwillingness of international investors to invest in the continent can creep in. The World Bank (2014) reports that a rise in Latin America's infrastructure to equate East Asian standards would lead to a corresponding annual GDP positive growth of 1.4% to 1.8% while income inequality would fall by 10 percent to 20 percent.

Budgets can be prepared, and public participation conducted but if funds are not released in good time, execution of projects can be adversely affected. The CoB, in Kenya, for example in their yearly report for 2014/2015 fiscal year, calls for strict budgetary controls to be put in place and high adherence to be observed to avoid diversion of exchequer issues to other projects/purpose rather than approved ones. The Nepalese government in a bid to seal loopholes and improve financial discipline in its projects undertook to adopt the Public Financial Management (PFM) system. The PFM was specifically to be used to enhance increased accountability in public expenditure, financial management, and addressing fiduciary and governance weaknesses in utilization of public resources. Country issues potentially impacting PFM such as significant fiscal activities outside stipulated budgets, weak absorption of funds and delays in release of funds for projects (GoN, 2014).

Financial resources are the focal point for a project to succeed or fail (World Bank, 2010). Since infrastructure projects are capital intensive, virtually all the resources attached to infrastructure implementation be it sourcing for equipment, software, personnel, trainings and galvanization of stakeholders, all point to use of funds. With the allocation of adequate funds, project quality and durability is guaranteed. However, inadequate funds, mismanagement of funds, political bigotry and failure to pay contractors in time apart from budgetary deficits and the over reliance for funds from the national government has hindered the smooth implementation of infrastructure projects at the county level in Kenya. This has been aggravated by delays in disbursement of the funds thus bringing projects and services to the citizens to a halt because of non-payment of salaries or contractual fees.

6.1.3 Stakeholder Participation and Implementation of Infrastructure Projects:

Stakeholder participation in projects can be enhanced by properly structuring various economic development goals questions appropriately in clusters, then engaging the participants to express their preferences (Brun, 2009). The involvement of the community (public) is vital in the generation of beneficial ideas on how to implement infrastructure projects and also suggestions on how to better improve available infrastructure (SMARTE, 2010). Doing this, mirrors clearly what the community can benefit from looking at the past and what can be done into the future.

Robert (2004) as cited in Odoyo (2013) asserts that one way of protecting freedom of decisions made is by incorporating stakeholders in decision making. (Shepherd and Bowler, 1997; Shindler and Cheek, 1999; Mumpower and Beirerle, 2002) opine that greater levels of public participation enhances decision making and a sense of project ownership. However, stakeholders must be involved in prioritization of projects to enhance the project ownership. Mekajuma (2011) warns that political interests can jeopardize projects where politicians force their way through with projects which are of less help in the eyes of the citizens. Prioritization therefore can enable communities to come up with strategies or projects they think can better improve their living standards since they know better what ails them. However, efforts must be made to ensure that management and performance aspects meet the participants' expectations (Manowang and Ogunlana, 2016).

6.1.4 Project Design and Specifications and the Implementation of Infrastructure Projects:

Carroll, (2006) describes e-business projects as ones where project duration stands out as the most significant factor in their success and that projects ought to be designed in an optimal manner when it comes to time. Organizations that build and projects designs right the first time are likely to succeed because of the quality of their products as a result of using the best inputs. Infrastructure projects being implemented must not be susceptible to damage (given the huge capital outlay required for their uptake) thus proper and well thought out designs must be considered to guarantee quality of such infrastructure projects.

Disasters related to collapsing of infrastructure have seen many people lose their lives. These disasters have been caused by among other factors poor designs of structures and greedy officials from various government agencies by-passing regulations and set standards on construction of infrastructure (NCA, 2017). The government through its regulatory bodies must be on the forefront to ensure construction codes, standards and county government regulations are up to the acceptable levels. For example, in Kenya, the regulatory bodies such as National Construction Authority (NCA), Engineers Board of Kenya (EBK) and the county government Licensing and Inspection departments should enforce regulations to ensure quality and safety standards are not compromised. In this manner, disasters associated with lapses in designs can be averted and that implementation of infrastructure project meets the needs of the beneficiaries (Guo, 2005 and NDRC, 2006).

Project design necessitates clear and robust planning from the project management team. Clear cut out work plans which have incorporated stakeholder ideas and have been budgeted for need to be planned for in advance. From the designs and specifications, a lot of savings can be achieved without compromising on the quality by leveraging on optimum expenditure on material resources, activities and duration of project (Kimanthi, 2016). Technical feasibility studies go a long way in accepting or rejection of the project at hand. Issues such as type materials to be used, climate and topography determines the costing of the project, staffing and even the type of machinery to employ. Consequently, this will enhance the probability of success of the projects (Coogan, 2000). Infrastructure projects have a fair share of problems with them especially on the environment. Environmental Impact Assessments (EIA) reports clearly indicate the consequences and risks attached to a project and the mitigations thereof. The communities in the areas where such projects are being undertaken need to be adequately compensated should they be affected by the projects.

Infrastructure project success just like in any other project hinges on whether the project deliverables of cost, time and quality can be achieved (Atkinson, 1999). Apparently, any misgiving which leads to delays in a project thus affects the success of a project as this will mean escalation of the costs. Harihan and Sawant (2012) asserts that large infrastructure projects that have been undertaken in India have exposed the country to more complexities and risks. The size and magnitude of such projects means the cost of meeting them is also high thus exposing the country to financial risk.

6.1.5 Human Resource and Successful Implementation of Infrastructure Projects:

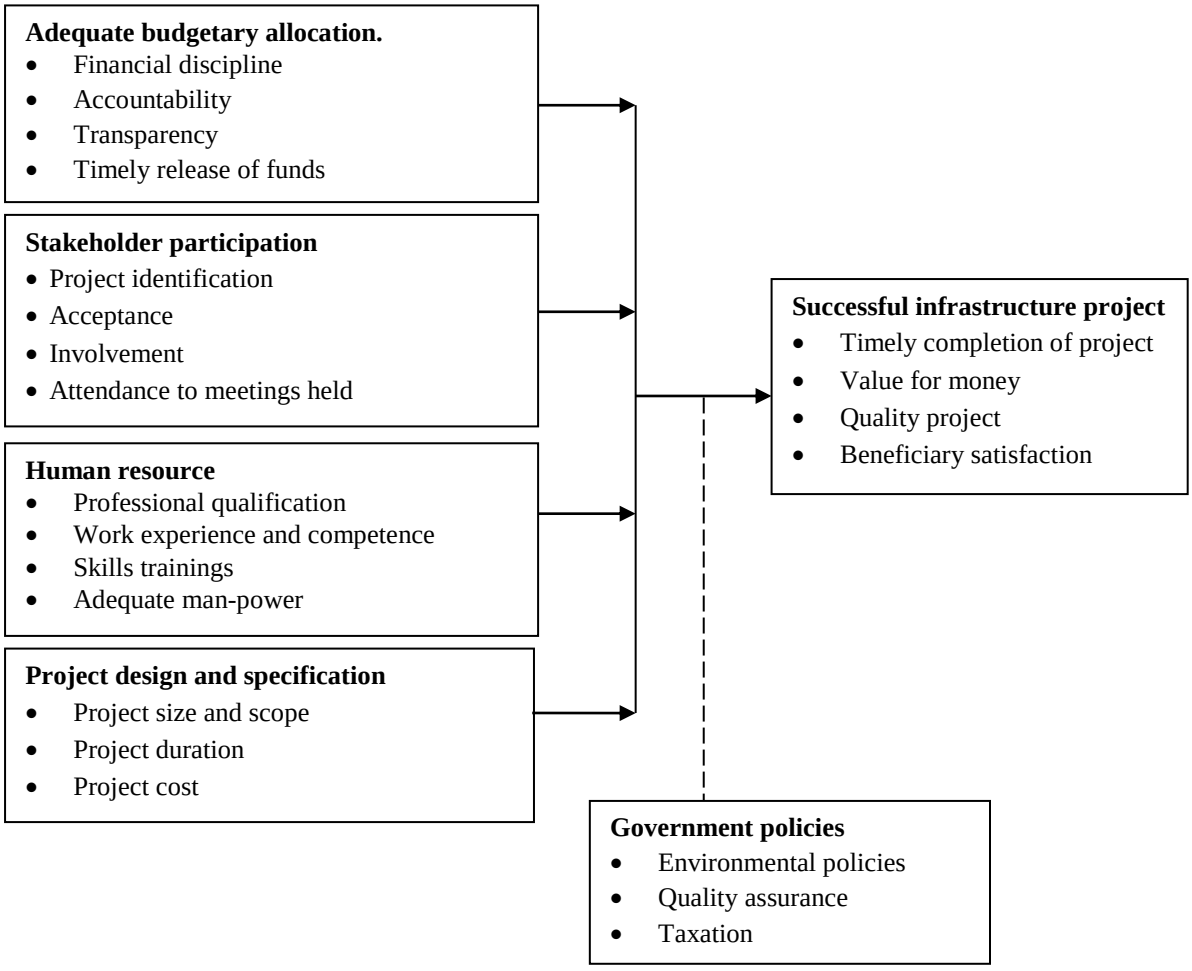
Human Resource Management is one of the key Project Management Body of Knowledge. (PMBOK), knowledge areas. As defined by Cleland and Kerner (1985), a project is a combination of human and non-human resources pulled together in a temporary organization to achieve a specified purpose. Labour, a core component of the four factors of production in the production theory, drives the construction of infrastructure projects. Putting up infrastructure is labour intensive despite the advancements and innovations in technology (Jarkas, Radosavljevic and Wuyi, 2014). In Thailand, inadequacy in resources – manpower and finances – has led to ineffective development of infrastructure projects (Aksorn and

Charoenngam, 2015). This has been aggravated by incompetency and inadequate technical skills (Yung and Chan, 2012) thus dragging development projects. The role played by staff in the implementation of infrastructure projects cannot be overemphasized. Proper segregation and definition of the roles and responsibilities by employees and the support provide to peers, junior staff and management enables a seamless flow of work thus management becomes effective and efficient and at the same time discipline and accountability is enhanced BorvornIrangkura and Ayudha (2012). The Japanese and Chinese organizations are very successful when it comes to construction of infrastructure because of their technical ability and strict discipline in whatever they do (Harch, 2010). In the developing world, governments have had a torrid time with projects failing or abandoned midway because of failure to employ qualified staff or employees not being motivated enough such as not being paid salaries in time, or salaries paid not commensurate to the load of work done.

Physical development of infrastructure should be accompanied by up-skilling of labour and meeting industry specific requirements (Johnston and Guidolin, 2008). The business environment is dynamic and highly unpredictable. For an organization to succeed, proper strategies must be conceived to stay ahead of the pack (Sadler-Smith et al., 2000). It has been suggested, in previous studies by (Schmidt and Lines, 2002), that it's significant and highly crucial to employ self-motivated, skilled and well-educated personnel to beat off competition (Low, 1998 and O'Connell, 1999).

Failure of infrastructure projects is caused by a myriad of circumstances. Kagiri and Wainaina (2013) for instance noted inadequate technical expertise and technological inadequacies as a causal agent to most infrastructure projects failure in Nairobi and Kiambu counties respectively. They note that close to 40% of infrastructural projects like hospitals, roads, schools etc. had either stalled or failed completely because of use of inappropriate technology or poor expertise by the locals.

6.2 Conceptual Framework:



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7. RESEARCH METHODOLOGY

7.1 Research Design:

Osedo, (2017) describes research design as a plan that explains how data is collected to investigate research questions in an economic manner. The study adopted a descriptive design approach. Descriptive design was used since it is capable of obtaining data from a large area over a short period of time. Descriptive design also helped the researcher to explain and describe the salient characteristics of the variables under study and also gave ideas for further probe and research.

7.2 Target Population:

According to Mugenda and Mugenda (2008), a population is defined as a complete set of individuals, cases or objects with same observable characteristics. Ngechu (2004) defines a population as a set of people, services, elements and events, group of things of households being examined. The study aimed to interrogate and gather data for infrastructure projects (roads, education, health and water projects) commissioned by the County government of Kilifi for the period 2014 to 2017 from the different project managers, project contractors, engineers, employees and members of the community where the projects were commissioned as shown in table 3.1below

Table 7.1: Target population

Target Population	Population Size	Percentage (%)
Project Contractors	103	13.9
Project Managers	61	8.3
Project engineers/employees	210	28.5
Community development officers	364	49.3
Total	**738**	**100**

Source: Kilifi County Integrated Management Report 2018

7.3 Sampling Size and Sampling Procedure:

Mugenda and Mugenda (1999), describes a sample size as a small group drawn from a population. According to Mugenda and Mugenda (2008), for a study to have any meaningfulness, a sample size of 10% to 30% of the targeted population is sufficient and economical. However, this study used the Yamane (1967), Glenn (1992) and Israel (2009) formula in computing the sample size at 95% level of significance., which is given as:

Substituting the values in the formula we get; n=738/1+738(0.05^2) = 259 respondents.

This study used stratified sampling in determining its sample size to ensure equal chance of representation and participation from each stratum/category.

Table 7.2: Sample Size

Target Population	Population Size	Sample Size (n=Nx0.35)
Project Contractors	103	36
Project Managers	61	21
Project Engineers/Employees	210	74
Community Development Officers	364	128
Total	**N=738**	**n=259**

Sample size (n): 259/738=0.35

7.4 Data Collection Instruments:

Questionnaires were used to collect data from the field. Questionnaires administered to respondents had close-ended questions and statements where the respondents would express their feeling and perceptions towards those statements. Close-ended questions ensured that the respondents did not go outside the confines of the subject under study thus saving time and allowing for easy analysis of collected data. Secondary data was collected from well documented journals, magazines and other library materials.

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7.5 Data Analysis:

Data collected from the field was converted into a form that could easily be managed and interpreted for decision making. Questionnaires collected from the field were checked for completeness, errors and omissions. Editing and cleaning of data was done where necessary to ensure consistency. Descriptive statistics such as frequencies, percentages and mean were used for presentation and analysis. Data extracted from the questionnaires was coded, tabulated and to ensure better and faster interpretation, was analyzed using Statistical Package for Social Sciences (SPSS). Hypothesis testing was done using non-parametric test that is the Chi-square.

8. RESEARCH FINDINGS AND DATA ANALYSIS

8.1 Adequate Budgetary Allocation and the Successful Implementation of Infrastructure Projects:

Respondents were asked as to whether adequate budgetary allocation influenced the successful implementation of infrastructure projects. 115 respondents representing about 86.47%, agreed to this statement compared to a paltry 18 respondents representing 13.53% who disagreed to the proposition.

Table 8.1: Rating of adequate budgetary allocation and the successful implementation of infrastructure projects

Statement	Level of agreement				
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. Funds meant for implementation of infrastructure projects are released in good time to allow for early preparation and execution of projects.	70	46	0	11	6
2. Accountability and transparency in usage of financial resources is crucial in ensuring investor confidence in infrastructure projects.	45	74	4	8	2
3. Diversion of budgeted funds meant for infrastructure to other emergency projects compromises successful project implementation.	56	66	2	5	4
4. Budgetary allocation and funding of projects should incorporate stakeholders input to enhance project uptake and ownership.	63	51	3	6	5

From the results in table 4.3 above, majority of the respondents (70) strongly agree that timely release of funds influences successful project implementation. Those who agreed to the statement were 46 with 11 respondents disagreeing. The second indicator on accountability and transparency triggered positive agreements from 119 respondents (45 strongly agree and 74 agree) with those in disagreement averaging 10 respondents. On to the third idea on diversion of funds to other projects, 10 respondents disagreed compared to 122 respondents who supported the idea. Finally, on involvement in allocation of funds to projects, 63 respondents strongly supported the idea followed by 51 respondents who agreed. However, 3 respondents were undecided.

Table 8.2: Influence of adequate budgetary allocation on successful implementation of infrastructure projects

	Indicator	Mean
1	Funds meant for implementation of infrastructure projects are released in good time to allow for early preparation and execution of projects.	0.91
2	Accountability and transparency in usage of financial resources is crucial in ensuring investor confidence in infrastructure projects.	0.95
3	Diversion of budgeted funds meant for infrastructure to other projects compromises successful project implementation.	0.90
4	Budgetary allocation and funding of projects should incorporate stakeholders input to enhance project uptake and ownership.	0.86

In ascertaining whether adequate budgetary allocation influences the successful implementation of infrastructure projects, respondents were asked to rate the extent to which they agreed or disagreed with given statements on indicators on a rating scale. The calculated mean supports this idea as follows: timely release of funds (0.91); accountability and transparency (0.95); diversion of budgeted funds (0.90) and stakeholder's budget preparation input (0.86).

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Table 8.3: Testing of Hypothesis of Adequate Budgetary Allocation versus Successful Implementation of Infrastructure Projects

The first objective of the study was to determine influence of adequate budgetary allocation on the successful implementation of infrastructure projects. The researcher hypothesized the objective as follows;

H_0: There is no significant relationship between adequate budgetary allocation and successful implementation of infrastructure projects in Kilifi County, Kenya.

H_1: There is a significant relationship between adequate budgetary allocation and successful implementation of infrastructure projects in Kilifi County, Kenya.

f	f_e	$(f- f_e)$	$(f- f_e)^2$	$\{(f- f_e)\}^2/ f_e$
70	26.6	43.4	1883.56	70.81
46	26.6	19.4	376.36	14.15
0	26.6	-26.6	707.56	26.60
11	26.6	-15.6	243.36	9.15
6	26.6	-20.6	424.36	15.95
				$\sum \{(f- f_e)\}^2/ f_e$ =136.7

Degrees of freedom = 4

Level of significance at 0.05= 9.488

Calculated chi-square value = 136.7

The calculated chi-square value of 136.7 is greater than the critical value 9.488 at 5% confidence level. Therefore, we accept the alternative hypothesis and reject the null hypothesis. Consequently therefore, adequate budgetary allocation influences the successful implementation of infrastructure projects in Kilifi County, Kenya.

8.2 Stakeholder Participation and Successful Implementation of Infrastructure Projects:

Questions on whether stakeholder participation influences the successful implementation of infrastructure projects in Kilifi County were asked. The majority of the respondents 123, representing 92.48% agreed to this idea whereas only 10 respondents equaling to 7.52% thought otherwise.

Table 8.4: Rating of stakeholder participation and successful implementation of infrastructure projects

Statement	Level of agreement				
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. Successful implementation of infrastructure projects depend on stakeholder's participation during the project identification phase.	77	44	0	9	3
2. Community acceptance, ownership of identified projects and community involvement in their implementation determines success of such projects.	64	57	5	7	0
3. Attendance of stakeholders to meetings held in deliberation of ongoing infrastructure projects and how to continuously improve them taking note of any adjustments and controls to be made is necessary for project success.	39	73	11	9	1
4. Members of the community where project is being implemented should be given job opportunities to ensure transfer of skills.	56	75	0	2	2

As indicated in table 8.4, majority of the respondents (77) strongly support the idea that stakeholder participation influences successful project implementation followed by those who agree at 44. Those who disagree are 9 respondents, with 3 respondents strongly disagreeing to the idea. On community acceptance and ownership of project being

implemented, majority (64) are in strong agreement compared to only 7 respondents who disagree. 5 respondents are undecided with 57 respondents embracing the idea. Attendance and participation in meetings held elicited agreements from 73 respondents with only 1 respondent in disagreement. On whether transfer of skills be actualized through employment of community members, 75 respondents agreed, 56 strongly agreed, with 2 respondents disagreeing.

Table 8.5: Influence of stakeholder participation on successful implementation of infrastructure projects

	Indicator	Mean
1	Successful implementation of infrastructure projects depends on stakeholder's participation during the project identification phase.	0.83
2	Community acceptance, ownership of identified projects and community involvement in their implementation determines success of such projects.	0.85
3	Attendance of stakeholders to meetings held in deliberation of ongoing infrastructure projects & how to continuously improve them taking note of any adjustments and controls to be made is necessary for project success.	1.0
4	Members of the community where project is being implemented should be given job opportunities to ensure transfer of skills.	0.86

In ascertaining whether stakeholder participation influences successful implementation of infrastructure projects, respondents were asked to rate the extent to which they agreed or disagreed with given statements on a rating scale. The calculated mean supports the proposition as follows: stakeholder project identification (0.83); community acceptance (0.85); attendance of stakeholder meetings (1.0); transfer of skills through employment (0.86).

Table 8.6: Testing of Hypothesis of Stakeholder Participation versus Successful Implementation of Infrastructure Projects.

The second objective of the study was to examine influence of stakeholder participation on the successful implementation of infrastructure projects in Kilifi County, Kenya. It was hypothesized as:-

H_0: There is no significant relationship between stakeholder participation and successful implementation of infrastructure projects in Kilifi County, Kenya.

H_1: There is a significant relationship between stakeholder participation and successful implementation of infrastructure projects in Kilifi County, Kenya.

f	**f_e**	**$(f- f_e)$**	**$(f- f_e)^2$**	**$\{(f- f_e)\}^2/ f_e$**
64	26.6	37.4	1398.76	52.6
57	26.6	30.4	924.16	34.7
5	26.6	-21.6	466.56	17.5
7	26.6	-19.6	384.16	14.4
0	26.6	-26.6	707.56	26.6
				$\sum \{(f- f_e)\}^2/ f_e = 145.8$

Degree of freedom = 4

Level of significance at 0.05= 9.488

Calculated chi-square value = 145.8

Since the calculated chi-square value of 145.8 is greater than the critical chi-square value at 5% level of confidence, we accept the alternative hypothesis and reject the null hypothesis hence we conclude that stakeholder participation influences the successful implementation of infrastructure projects in Kilifi County, Kenya.

8.3 Human Resources and the Successful Implementation of Infrastructure Projects:

In relation to whether human resources influence the successful implementation of infrastructure projects, a good number of the respondents (102 representing 76.69%) supported the idea. On the contrary, 31 respondents, representing 23.30% were in denial with the idea.

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Table 8.7: Likert scale rating of human resources and successful implementation of infrastructure projects

Statement	Level of agreement				
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. Project staff with requisite professional qualifications in the particular field of study ensures success of projects.	89	34	7	1	2
2. Project managers and staff competence and past experience with projects of same calibre ensures successful implementation of infrastructure projects.	46	62	16	9	0
3. Continuous training of project managers and staff is important to keep abreast with new trends and technological advancements in infrastructure construction.	31	84	6	12	0
4. Adequacy of staff in construction of infrastructure projects enhances the probability of finishing the project within time, cost and scope.	52	76	0	4	1

As depicted in table 8.7 above, the findings show that 89 respondents strongly agree that professional qualifications influence successful implementation of a project. 34 respondents agree while 2 respondents strongly disagree. Work experience and competency has 62 respondents in agreement, 46 strongly agree, with 16 respondents being undecided. 84 respondents believe that continuous training is crucial in project success with 12 respondents in disagreement. Finally, on adequacy of staff, 76 respondents agree that it affects project success with 52 respondents agreeing. None of the respondents is undecided on this idea.

Table 8.8: Influence of human resource on successful implementation of infrastructure projects

	Indicator	Mean
1.	Project staff with requisite professional qualifications in the particular field of study ensures success of projects.	0.74
2.	Project managers and staff competence and past experience with projects of same calibre ensures successful implementation of infrastructure projects.	0.98
3.	Continuous training of project managers and staff is important to keep abreast with new trends and technological advancements in infrastructure construction.	1.02
4.	Adequacy of staff in construction of infrastructure projects enhances the probability of finishing the project within time, cost and scope.	0.87

In ascertaining whether human resources influence successful implementation of infrastructure projects, respondents were asked to rate the extent to which they agreed or disagreed with given statements on a rating scale. The calculated mean supports the proposition as follows: work experience (0.98); continuous training (1.02); adequacy of staff (0.87).

Table 8.9: Testing of Hypothesis of Human Resources versus Successful Implementation of Infrastructure Projects

The third objective was to assess influence of human resources on the successful implementation of infrastructure projects. To achieve this, the following hypothesis was stated;

H_0: There is no significant relationship between human resources and successful implementation of infrastructure projects in Kilifi County, Kenya.

H_1: There is a significant relationship between human resources and successful implementation of infrastructure projects in Kilifi County, Kenya.

f	**f_e**	**$(f- f_e)$**	**$(f- f_e)^2$**	**$\{(f- f_e)\}^2/ f_e$**
46	26.6	19.4	376.36	14.1
62	26.6	35.4	1253.16	47.1
16	26.6	-10.6	112.36	4.2
9	26.6	-17.6	309.76	11.6
0	26.6	-26.6	707.56	26.6
				$\sum \{(f- f_e)\}^2/ f_e = 103.6$

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Degree of freedom = 4

Level of significance at 0.05 = 9.488

Calculated chi-square value = 103.6

Since the calculated chi-square value of 103.6 is greater than the critical chi-square value at 5% level of significance, the alternative hypothesis is accepted, and the null hypothesis is rejected. Therefore, we conclude that human resources influence the successful implementation of infrastructure projects in Kilifi County, Kenya.

8.4 Project Design and Specifications and the Successful Implementation of Infrastructure Projects:

The respondents were asked as to whether the designs and specifications of an infrastructure project influences its successful implementation in Kilifi County, Kenya. Of the 133 respondents, 96 representing 72.18% supported the idea unlike 37 respondents representing 27.82% who did not agree to the suggestion.

Table 8.10: Likert scale rating of project design and specification and successful implementation of infrastructure projects

Statement	Level of agreement				
	Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
1. The size and magnitude of infrastructure projects is significant in successful implementation of infrastructure projects.	24	66	16	20	7
2. The duration of infrastructure projects completion determines the success of infrastructure projects.	22	54	13	23	21
3. Designs of infrastructure projects and related costs determines success of infrastructure projects.	20	72	8	15	18

As depicted in table 8.10, the results indicate that 66 respondents agree with the premise that project size and magnitude influence successful implementation of infrastructure projects although 16 and 20 respondents are undecided and in disagreement respectively. 24 respondents agree with the idea. In relation to project time, 23 disagree that it affects successful implementation of infrastructure projects followed by 54 respondents who agree. 22 respondents strongly agree to the idea. To the last indicator on whether project costs influence successful project implementation, 72 respondents agree followed by 20 respondents who strongly agree, 8 respondents are undecided while 18 respondents strongly disagree.

Table 8.11: Influence of project designs and specification on implementation of infrastructure projects

	Indicator	Mean
1.	The size and magnitude of infrastructure projects is insignificant in successful implementation of infrastructure projects.	1.23
2.	The duration of infrastructure projects completion determines the success of infrastructure projects.	1.41
3.	Designs of infrastructure projects and related costs during mobilization is a determinant factor in success of infrastructure projects implementation.	1.05

In ascertaining whether project design and specification influences successful implementation of infrastructure projects, respondents were asked to rate the extent to which they agreed or disagreed with given statements on a rating scale. As in the above table, majority of the respondents agree that stakeholder participation influences successful implementation of infrastructure projects. The calculated mean supports the idea as follows: project size and magnitude (1.23); project duration (1.41); project design costs and feasibility (1.05).

Table 8.12: Testing of Hypothesis on Project Design and Specification and Successful Implementation of Infrastructure Projects.

The fourth objective of the study was to establish influence of project design and specification on the successful implementation of infrastructure projects in Kilifi County, Kenya. It was hypothesized as follows:-

H_0: There is no significant relationship between project design and specification and the successful implementation of infrastructure projects in Kilifi County, Kenya.

H_1: There is a significant relationship between project design and specification and the successful implementation of infrastructure projects in Kilifi County, Kenya.

f	f_e	$(f- f_e)$	$(f- f_e)^2$	$\{(f- f_e)\}^2/ f_e$
24	26.6	-2.6	6.76	0.3
66	26.6	39.4	1552.36	58.4
16	26.6	-10.6	112.36	4.2
20	26.6	-6.6	43.56	1.6
7	26.6	-19.6	384.16	14.4
				$\sum \{(f- f_e)\}^2/ f_e$ =78.9

Degree of freedom = 4

Level of significance at 0.05 = 9.488

Calculated chi-square value = 78.9

Since the calculated chi-square value of 78.9 is greater than the critical chi-square value of 9.488, we accept the alternative hypothesis and reject the null hypothesis. Consequently, project design and specification influence the successful implementation of infrastructure projects.

9. DISCUSSION OF KEY FINDINGS

In relation to the first objective which sought to determine influence of adequate budgetary allocation on the successful implementation of infrastructure project, most respondents supported the idea with 115 representing 86.47%. On a rating scale of the various indicators, a majority of the respondents (70) strongly supported the idea that timely disbursement of funds influences successful implementation of infrastructure projects. On average 119 respondents also supported the idea of accountability and transparency in funds allocate to projects. The individual means of indicators also affirm that adequate budgetary allocation influences successful implementation of infrastructure projects. Upon a test on the hypothesis, the calculated chi-square value was found to be greater (136.7) compared to the critical value at 5% level of significance. Consequently, the alternative hypothesis was accepted. This therefore shows that there is a significant relationship between adequate budgetary allocation and the successful implementation of infrastructure projects. This conforms to a past study by Monyoncho (2015) who asserts that adequate funding is crucial in infrastructure projects reaching conclusion stage in devolved units. Also, in agreement to this is the World Bank (2010) who allude that adequacy in financial resources are the focal point for project success since all resources attached to infrastructure construction require funds. Chaligha (2014), also advocates for not only adequate funding, but also transparency and prudency in use of the allocated funds to ensure success of infrastructure projects.

As concerns the second objective which was to examine the influence of stakeholder participation on the successful implementation of infrastructure projects, of the 133 respondents, 123 respondents equaling to 92.48% unanimously agreed on the idea that stakeholder participation influenced the successful implementation of infrastructure projects. According to the calculated means for the individual components of the variable, majority of the respondents indicate that stakeholder participation influences successful implementation of infrastructure projects. Since the calculated chi-square value of 145.8% is higher than the critical chi-square value at 5% level of significance, the alternative hypothesis was accepted. It follows then that there is a significant relationship between stakeholder participation and the successful implementation of infrastructure projects. In agreement to this idea is SMARTE (2010) who asserts that stakeholder participation can generate further ideas and suggestions on how to better infrastructure construction and upgrade thus enable its successful implementation. Manowang and Ogunlana (2016), also agrees to this and notes that stakeholder's expectations must be met in order to boost their morale. Irwin et al. (1994) views community involvement and engagement in decision making as an avenue of enhancing informed outcomes thus can increase the sustainability of infrastructure projects.

In relation to the third objective which sought to assess influence of human resources on the successful implementation of infrastructure projects, a majority of respondents (102, representing 76.69%) were in agreement that human resources play a significant role in ensuring successful implementation of infrastructure projects. According to the individual means

on the components of the variable, majority of the respondent agree that human resources influence successful implementation of infrastructure projects. Since the calculated chi-square value of 103.6 is greater than the critical value at 5% level of confidence, the alternative hypothesis was accepted. Therefore, there is a significant relationship between human resources and the successful implementation of infrastructure projects. Asserting to this is Alexandrova and Ivanova (2012) and (Ramelyte and Banaitis, 2013) who note that consideration to human resources it terms of training, competitive remuneration and management support as essential in securing the success of infrastructure projects. Other studies by Cao Hao Thi and Swierczek (2007) equally consider human resource competencies and skills as essential in infrastructure projects performance.

To the last objective which sought to establish influence of project design and specifications on the successful implementation of infrastructure projects, 96 respondents equaling 72.18% agreed to the idea that project design and specification does influence the success of infrastructure projects. According to the calculated means of the various components under this variable, majority of the respondents agreed to the idea that project design and specification influence the successful implementation of infrastructure projects. Since the calculated chi-square value 78.9 is greater than the critical value at 5% confidence level, then the alternative hypothesis was accepted. It resonates therefore that, there is a significant relationship between project design and specification and success of infrastructure projects. Butcher and Sheehan (2010) and Tiedemann (2012) agree to this and assert that proper designs enhance the quality and success of infrastructure projects. Assenting also to this is (Zhao, 2005 and Wang, 2006) who insist on the monitoring and evaluation of project designs to enhance their quality and thus promote successful infrastructure projects. Coogan (2000) calls for feasibility studies to be done before project commencement as this helps in costing of the various project inputs such as materials to be use, machinery to employ etc. in advance.

10. CONCLUSIONS AND RECOMMENDATIONS

10.1 Conclusion of the Study Findings:

Adequate budgetary allocation is significant and necessary to ensure infrastructure projects are completed in good time and are of the right quality as evidenced by the acceptance of the alternative hypothesis.

The findings of the study also revealed that stakeholder participation influences successful implementation of infrastructure projects.

Further, the researcher concludes that human resources are significant to infrastructure project success. Labour is readily available however employees need continuous training to keep them abreast with technological changes and other modern ways of infrastructure construction. Motivation of the workforce is necessary to ensure morale is high and that quality of work done is not jeopardized.

Finally, the researcher concludes that a significant relationship exists between project design and successful infrastructure projects implementation as depicted by the acceptance of the alternative hypothesis. Project magnitude and costs involved determines the designs and specifications of infrastructure projects and by extension the quality/success of such projects. Proper initial plans and execution of those plans ensures that cost overruns and budget deficits are not experienced thus projects are completed in time.

The four variables under study are thus significantly crucial in the successful implementation of infrastructure projects. From the findings they can be ranked as follows in terms of their performance; stakeholder participation, adequate budgetary allocation, human resources then finally project design and specifications.

10.2 Recommendations:

The researcher based on the research findings recommends that;

Budgets prepared should adequately cover the costs of infrastructure projects and constant reviews be done to ensure projects proceed to completion without hitches. The government should also avoid diverting funds meant for infrastructure to other projects and also ensure there is value for money in projects being undertaken.

Coordinated active stakeholder involvement right from project conception, in order to foster project ownership and uptake to ensure project success. This will reduce resistance to projects being undertaken and ensure harmony between the promoters of a project and the stakeholders' thus successful implementation of infrastructure projects.

Human resources significantly influence the successful implementation of infrastructure projects therefore adequacy of labour, work experience, registration with professional bodies and continuous trainings must be adhered to at all times to guarantee project success.

Feasibility studies must be undertaken before a project commences. This will position the company undertaking the implementation of infrastructure project well by mitigating on risks earlier enough. The costs associated with various project designs and specifications must be scrutinized well in advance to avoid hitches in project implementation.

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