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**Group Dynamics Management and Performance of Road Infrastructure Projects**

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**Abstract**

Performance of road infrastructure projects is crucial for the growth and development of the economy. However, firms especially the local firms experience problems in enhancing team work and cohesion to enable them complete projects within the budgeted cost, time schedule and attaining the desired quality. Despite the crucial role played by project group dynamics management in determining the performance of road infrastructure projects, little attention has been paid to this key factor. This paper sought to establish the effects of group dynamics management on performance of road infrastructure projects. The study was carried out in the Lake Basin Region, Kenya that had a total of 41 road infrastructure projects undertaken by local firms. The study concluded that group dynamics management had a significant effect on performance of road infrastructure projects undertaken by local firms.

**Keywords:** Group dynamics management, Infrastructure projects, Local firms, Road projects and project performance and project teams.

**1.0 Introduction**

Performance of road infrastructure projects is essential for the economic growth and development of any country. These projects play a critical role in the economy in terms of wealth creation and provision of employment opportunities. Infrastructure covers a range of services, from public utilities such as power, telecommunications, water supply, sanitation and sewerage, solid waste collection and disposal, and piped gas; to public works such as roads, dams and canal works, railways, urban transport, ports, waterways and airports (World Bank, 2012). Massive investments are put into infrastructure projects.

Throughout the world, the business environment within which construction firms operate continues to change rapidly. Firms failing to adapt and respond to the complexity of the new environment tend to experience survival problems (Lee, 2009). With increasing users' requirements, environmental awareness and limited resources and high competition, contractors have to be capable of continuously improving their performance (Samson &Lema, 2011).

There are several factors that impact on performance of projects. Complexity of the project, Shortage of skills of manpower, weaknesses in organizational design and capabilities, poor supervision and poor site management, unsuitable leadership, shortage and breakdown of equipment among others cause delays in the United Arab Emirates (Faridi& El-Sayegh, 2010). Conflict, poor workmanship and incompetence of contractors had also negative impact on

project performance in sub-saharan Africa (Carter, 2012). Carter further noted that project managers should be given full authority to implement the projects. Harries and Reyman (2010) noted that on average 65 percent of road projects constructed by local firms in Africa were considered to have failed. These projects were suspended and later contracted to other firms. Therefore, performance of projects is a subject many scholars have discussed with the objective of ensuring that projects are undertaken within the stipulated cost, time schedule and meet the desired quality. However, little attention has been focused on road projects constructed by local firms. There is need therefore to understand the effects of group dynamics management on the performance of road infrastructure projects.

### *1.1 Research Objectives*

The objectives of this research were: to determine the effect of leadership in project performance, to establish the influence of motivation on project performance and to evaluate the effect of project teams management on the performance of a project.

## **2.0 Literature Review**

Literature review enables a researcher to formalize key constructs; Group dynamics management, Infrastructure projects, Local firms, Road projects and project performance and project teams useful for this research on the effect of project resource mobilization on performance of road infrastructure projects. Literature review also highlights various studies done by other scholars and their findings. In summary, it introduces the effects of project resource mobilization has on performance of road infrastructure projects.

### *2.1 Group Dynamics Management and Performance*

Nassè. T. B. (2019), Carbonell and Nassè (2021) have demonstrated that performance is vibrant and active in organizations where management focuses on a good leadership model that motivates and influences a given group of workers to give the best of themselves. Prackel (2010) indicates that when people are carrying out a given project, they often take certain roles. The effect of these roles in others and on a group as a whole is described as group dynamics. The study asserted that a group with a positive dynamic has trust in one another, they work towards collective decision and they hold one another accountable for making the project at hand successful. Prackel further said when a team lacks a strong leader, a more dominant member of the group may take over and this may lead to lack of direction, infighting or focus on wrong priorities. This causes poor group dynamics.

### *2.2 Effects of Poor Group Dynamics on Performance*

Lehman and Dubrene (2011) studied causes of poor group dynamics by issuing 105 questionnaires to project managers and contractors. The study results indicated that poor group dynamics in infrastructure projects may be caused excessive difference to authority. This happens when people want to be seen to agree with a leader and therefore hold back from expressing their view. Blocking is another cause of poor group dynamics. Blocking occurs where team members behave in a way that disrupts the flow of information in a group either by disagreeing with others or being critical of others' ideas. It can also happen through a member withdrawing from participation or introducing humour at inappropriate times. The study also

found out that free riding was another cause of poor group dynamics. Riding occurs when some members take it easy and leave their groups to do all the work while evaluation apprehension occurs when some members feel judged harshly by other group members. Lipnack (2012) puts emphasis on weak leadership and excessive difference as the main factors that can cause delays in road infrastructure project completion. Lewis (2018) argued further that when a team lacks a strong leader, members may focus on wrong priorities leading to poor group dynamics.

### *2.3 Managing Project Teams*

Burgess and Stern (2013) conducted a study with the objective of establishing efficient methods of managing of project teams. The study results showed that adequate and timely planning of personnel is significant in preventing cost overruns in infrastructure projects. The study also noted that the optimal size of a project team required in infrastructure projects is driven by two principal factors, the total number of tasks to be performed and the effort needed to perform the tasks. However, the study failed to outline ways of enhancing cohesion among project teams experiencing poor group dynamics. Bande and Nasse (2020) study on the management of project teams in developing countries found out that communication plays a key role in excellence performance of projects.

Smith (2013) studied the causes and effects of poor group dynamics in the implementation of construction projects in Nigeria. The study found out that knowing team members, defining roles and responsibilities for everyone, combating of black sheep effect, tackling problems quickly and paying attention to frequent unanimous decision can enable project managers to deliver a successful project within the stipulated parameters. The further said these strategies will enable project managers to harness the different skills, talents and capability of team members so as to improve the performance of infrastructure projects. The study noted that many local construction firms do not embrace the spirit of group dynamics and this has greatly affected the performance of road projects. They suggested that project managers should address the conflicts so that all the members could work as a team.

Saunders (2014) research on analyzing tools of team excellence in road infrastructure performance indicated that project teams are seen in road projects as the best solution for a firm to efficiently achieve the desired quality of the road project within the stated time schedule. The flexibility and quick response to change will make teams to be more effective in implementing the road infrastructure projects. Katzenbach (2014) study on group dynamics found out that a group of people cannot be expected to work as well together at the early stages of teaming. He asserted that every team starts from being a group and develops into a high performing team as the project goes on. He further noted that the earliest stages of group development are proven to be the most challenging. The difficulties relate to communication, collaboration and motivation especially in the forming and storming stage. However, according to Smith (2014) group dynamics theories do not apply to firms with highly experienced teams whose members have worked together for many years.

In contemporary organizational settings, groups have been widely recognized as the key organizing unit partially because group work promises wider access to new information and a

great pool of diverse expertise. Baldwin (2014) carried out a study to establish the impact of network relations on group performance of infrastructure projects. The study found out that communication was directly and strongly associated with perceptions of team effectiveness in construction projects. This information and expertise is crucial in enhancing performance of projects as it will lead to speedy completion of projects and attainment of the desired quality.

Negative social interactions happens commonly with people who may be described by co-workers as irresponsible, unmotivated or indifferent because they do not offer valued information and insights (Arrow & McGrath, 2014). This can result to adversarial relationships. Such relationships, sometimes unavoidable because of task requirements are more likely to cause emotional distress, anger and indifference. This can lead to delays in project completion or failure to achieve the desired quality of the road projects. The major limitation of the study was its failure to consider other variables that determine performance of construction firms. The aforementioned studies focused on other areas other than performance of projects and were done in other countries hence need to conduct the study in Kenya.

**3.0 Discussion and Findings**

*3.1 Descriptive Results*

The study was interested in understanding the effect of group dynamics management on performance of road infrastructure projects. The results of the responses are shown in table

Table 3.1: Group Dynamics Management and Performance

	V. Little Extent %	Little Extent %	Average Extent %	Great Extent %	V. Great Extent %	Mean	SD
Team work and cohesiveness in constructing road projects.	8.8	17.8	53.3	8.8	11.1	1.67	1.025
Efficiency and effectiveness in constructing road projects.	11.1	28.9	37.8	17.8	4.4	2.45	0.765
Overall effect of group dynamics management on project performance.	2.1	4.2	8.3	18.7	66.8	4.42	0.964

**Survey, 2020**

Results show that 8.8 percent of the respondents indicated that team work and cohesiveness is embraced to a very little extent, 17.8 percent indicated little extent, 53.3 percent indicated average extent, 8.8 percent of the respondents indicated great extent and 11.1 percent indicated very great extent. About 28.7 percent of the respondents indicated either very little extent or little extent. Only 19.9 percent of the respondents fully embraced team work and cohesiveness in their firms. The mean and standard deviation for this characteristic was 1.67 and 1.025

respectively. The findings show that majority of the respondents (53.3 percent) indicated that team work and cohesiveness was embraced to an average extent.

According to Prackel and Dubrene (2010), team work among project teams is critical in the performance of infrastructure projects. This is supported by Burgess and Stern (2013) study which sought to establish methods of managing project teams. Some of the road projects cited by respondents where teamwork was a challenge were Kebirigo-Mosobeti- Keroka and Ndori-Luanda Kotieno road. This resulted in delay in the completion of road projects.

Road projects that experienced positive group dynamics to a great extent included Siaya-Rang’ala road and Rongo-Homa Bay road. Embracing positive synergy, individual and mutual accountability and complementary skills leads to better performance of infrastructure projects. When respondents were asked whether there was efficiency and effectiveness in undertaking project activities, their responses were; 6.7 percent of the respondents indicated to very little extent, 22.2 percent indicated little extent, 28.9 percent indicated average extent, 37.8 percent indicated great extent and 4.4 percent indicated very great extent. Cumulatively, 42.2 percent of the respondents indicated that their firms emphasized on undertaking project activities in an efficient and effective manner. The mean and standard deviation for the overall effect of group dynamics management on performance was 4.42 and 0.964 respectively. This implies that many local firms do not emphasize so much on efficiency and effectiveness in constructing road infrastructure projects. These results show that project resource mobilization has a significant effect on performance of road infrastructure projects constructed.

Figure 3.1 shows the relationship between group dynamics management and performance of road infrastructure projects.

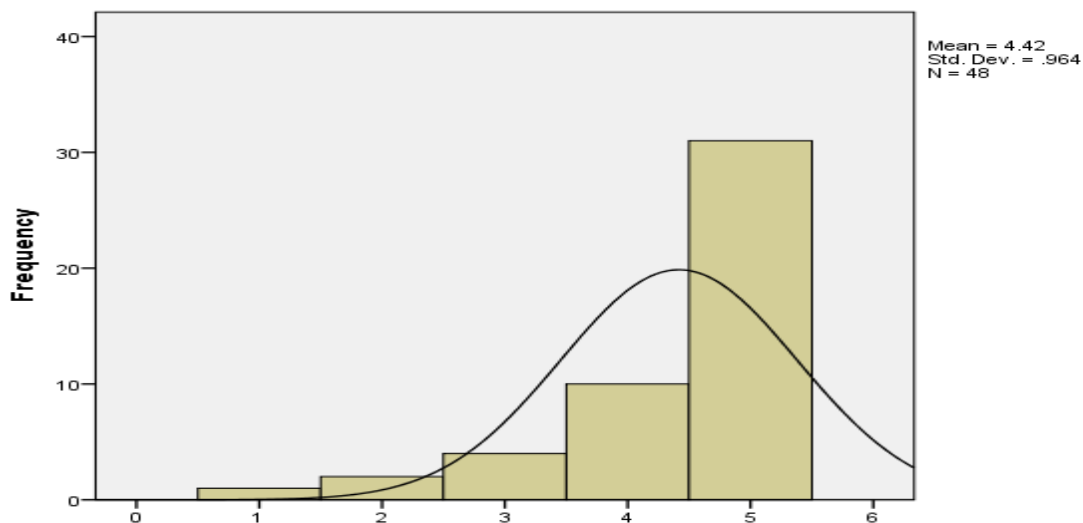


Fig 3.1: Relationship between group dynamics management and performance

### 3.2 Regression Results

The regression coefficient for group dynamics management was 0.239. This implies that the mean of performance of road infrastructure projects change by 0.239 per unit change in group dynamics management holding the other variables constant. The coefficient of group dynamics management had a p-value of 0.041 which was < 0.05 implying that, group dynamics management has a significant effect on performance of road infrastructure projects constructed by local firms in Kenya. Table 3.2 shows the regression results of each of the project management practices on performance of road infrastructure projects.

Table 3.2: Regression Results

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	$\beta$	Std Error			
Constant	0.299	0.291		1.026	0.311
GD	0.239	0.113	0.231	2.107	0.041

**Dependent Variable: PRI**

The findings contradict that of Smith (2014) which found out that group dynamic theories do not apply to teams whose members have worked together for a long period. The difference in the findings of this study and that of Smith (2014) could have arisen due to differences in the study areas. However, the findings concur with that of Saunders (2014) who asserted that project teams are the best solutions for a firm to efficiently achieve the desired quality of projects. Thus, embracing team work and ensuring efficiency and effectiveness in undertaking project activities has a significant effect on performance of road infrastructure projects constructed by local firms in Kenya.

According to Karzenbach (2014) poor group dynamics among project members affect performance of infrastructure projects because it leads to low efficiency, low productivity and low retention of experienced staff. This was supported by respondents when asked to indicate the other negative effects of poor group dynamics on performance of road infrastructure projects undertaken by local firms. When respondents were asked to suggest ways of enhancing efficiency among project teams, majority of the respondents (79.2 percent) indicated; having regular meetings to build team work and enhance bonding among project teams, handling conflicts as soon as possible and addressing “black sheep effect”.

**4.0 Conclusion**

The study concludes that group dynamics management has a significant effect on performance of road infrastructure projects undertaken by local firms. Inculcating a spirit of team work among project members has a significant effect on performance of road infrastructure projects. This will improve performance of road infrastructure projects undertaken by local firms. On the other hand, Poor group dynamics and negative social interactions affect performance of road infrastructure negatively.



### **5.0 Contribution to Knowledge**

Road infrastructure projects constructed in developing countries by local construction firms have continued to perform poorly in terms of cost, time and quality. For instance, Kenya's overall performance was 36.9 percent for the period 2011 to 2014. Despite this poor performance, none of the previous studies have focused on the performance of road infrastructure projects constructed by local firms in Kenya. Most of the studies focused on other infrastructure projects. Further these studies focused on other countries and hence there is need to conduct a study in Kenya.

In addition, no study has specifically focused the Lake Basin Region in spite of poor road infrastructure network. The paper therefore has shed light on the effect of group dynamics management on the performance of road projects constructed by local firms in Kenya. Hence, group dynamics management has a significant effect on performance of road infrastructure projects.

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