How resource capacity influence implementation of market shade construction project in Mageta Island, Siaya county Kenya

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Abstract: **Despite more research done on the resource management in construction industry, little is written about the individual companies and how they manage their resources to ensure successful implementation of construction projects. Most projects either stalls, or get abandoned or get finished but after a long period of time bur studies done with regard to these do not look at the individual company management but go for obvious reasons such as lack of capacity, poor weather and cost implications such as high variations or donor withdrawal. However many projects still get implemented within the stipulated time and conditions. The study seek to find out more about the individual management of a company resources by carrying out a research on the influence of resource management on the implementation of market shade construction project in Mageta island Siaya county. Resource capacity is used as one of the variable which is measured by bottleneck of resources, supply and demand and sequence delivery visa vie the implementation of market shade construction project as dependent variable. The study found out strong correlation coefficient of (p>0.05) significance between the resource capacity and the implementation of market shade construction.**

Keywords: **Resource management, Resource capacity, bottleneck resources, sequence delivery, supply and demand.**

I. INTRODUCTION

Capacity enables the determination whether the regulations are enforced benefits distributed revenue collected and programme completed. Therefore it plays a key role on policies success or failure to be implemented the focal point of argument about the origin of capacity is that it starts from within the bureaucracy. In most cases agencies that become successful strategically invest in capabilities [1 &2]. The main role of an organization for a very long time is to provide a capacity to execute policy. Although it's been under examined, the interest of bureaucratic agencies of their principals is to ensure quality implementation and independency of the choice of policy or policy itself yet disagreed on how much capacity a policy should be provided. However, the organization capacity of the choice of policy is determined by preference divergence technology of capacity investment and discount factors. Most general agencies expect their investment will be appropriate by principal, hence decrease in capacity and implementation levels in different ideal points. Implementation levels are increased when the players preference is diverged this can occur when the agency introduces a policy closer to its ideal by compensating high level of investments to its principal [3].

Furthermore, an agency with higher number of political appointees will be more likely to get instruction on policies that are more ambiguous. Prediction from the analysis shows that delegation requires agencies with low discount factor. For a company to have a good resource capacity the skills and knowledge of the individuals must be enhanced and the environment must be effective. The enabling environment governed by policy strategies, power relations, social norms legal regulatory framework the individual which the companies should possess knowledge experience, skills and attitudes with relation to their work. Capacity for resources for construction is fuelled by local actors' resources ambitions, which is different to replace using external inputs and finances. The survival of a company is achieved by demonstrating development of key relationships required which is regarded as earning of trust of others through legitimacy and credibility in addition to internal and external relationships [4].In a construction site that the winner of the tender has no ability to complete the works in time they normally allow for sub-construction work to improve their capacity especially

bottleneck resources. Individual firms biding for various contracts are either over capacity or under capacity those that have low capacities tend to give out sub-contracts to other small companies as they tend to complete the project on time, however capacity investments by individual firms are short-sighted [5] therefore capacity acquisition has been one of the major reasons that many construction company are partnering with small companies in order to achieve the desired objectives in construction industry. These prompt companies not to invest heavily on its capacity. Once the agreement is reached on the basis of sub construction works, companies can adjust their capacity to realize long run equilibrium output. Although, in the reality capital and labour are fundamental factors of production and cannot be adjusted instantly to achieve long run equilibrium to the extent that affirm faces a capacity constraints [6].

Talking about supply and demand, we opt to ask the question on whether the supply and demand affects the prices of things. In addition these depend on the sequence of delivery which is affected by time. The rate of productivity in a construction industry has the lowest ratings as compared to other industries this due to the fact that it's heavily reliance on labour and unfavourable environments. Waste is defined as time delay, lack of safety, quality cost, improper choice, unnecessary transportation trips, long distance and improper management methods [7] as defined by lean production method explaining the use of ready mix concrete is an issue that is complex as it's comprises both supply chain and construction management challenges [8]. It's therefore important to evaluate if lean practices and supply chain can lead to reduction in waste in concrete works.

In addition, significant losses of resources and project profitability in construction industry is significantly contributed due to material and time wastage in the construction project site for instance, inadequate supply of materials or unavailability of such would affect the productivity at the same time, time is wasted when carrying out the activities again for the second time such as reworking, recording and handling of materials at extra mile the reason for time wastage is concluded as due to shortage of labour, poor planning, unskilled workers and poor workflow layout for instance. In Singapore contribution to time wastage at a greater percentage is due to foreign unskilled workers who do not care about productivity as they are using the moment to make money and send home [9]. lean principles originated from Toyota production system which many organizations have adopted to improve this operation it's a principle that is used to minimize waste e.g. in transportation, inventory, motion, wasting, processing, over production defects etc. In supply chain process the contractors word only inform the suppliers of concrete when the installation of rebar and framework is ready for concreting after inspection. The supplier then has to deliver the mix punctually to ensure high productivity there must be proper coordination of sequence delivery as this ensures that delay in traffic is avoided at the same time no congestion in the site. Therefore, one can argue that the findings of on the delivery of concrete on site using lean principle can be used to ensure the sequence delivery of materials on site are done thus avoiding of wastage in any form and ensuring the rate of productivity is high [5].

In his conclusion problems of wastage result from poor workmanship, time wastage in delivery of materials and over supply of concrete materials both can be eliminated by training of workers adequately planning properly & providing good estimations. In addition the use of technology in concrete can reduce human errors and defect. The study adopted the use of resource based theory for the study which gives two main assumption of the theory i.e. resources are not homogeneous nor are they perfectly mobile between firms in an industry and otherwise form capabilities would be equal and no one firm within an industry would achieve a competitive advantage. To ensure profitability in a firm they must have the best strategies in place [11].Five framework stages for formulation of company strategies formulation of company strategies i.e. resources comprising identification and classification of firm resources, capabilities describing the firms capabilities, competitive advantage which appraises the rent generating potential of resources and capabilities in terms of their potential for sustainable competitive advantage and the appropriateness of their returns, strategy selection entails selection of strategies which best exploit the firms resources and capabilities relative to external opportunities and finally you identify resource gaps which need to be filled [11].

II. BODY CONTENT

2.1 Introduction

The purpose of the study was to investigate the influence of resource management on the implementation of market shade construction project in Mageta Island, Siaya county Kenya. The objective of the study for this publication was to determine how resource capacity influences implementation of market shade construction project in Mageta Island, Siaya county Kenya. Analysis of data, interpretation of the outcome and discussion on the influence of resource management on

implementation of market shade construction project in Mageta Island, Siaya Kenya, and this section presents the findings and interpretation of the study. The demographic information of the respondents is presented first. The descriptive statistics was used to describe and summarize the data inform of tables, frequencies and percentages. Thereafter inference is drawn out of the sample used. Correlation analysis [10] was used to establish the influence of resource capacity on implementation of market shade construction. All tests of significance are computed at $\alpha = 0.05$. For the qualitative data a thematic analysis approach is used. The Statistical Package for Social Sciences (SPSS) was used to analyse the data.

2.2 Questionnaire return rate

The study focused on the construction workers who worked in the construction of market shade project, both technical, management and casual workers. These gave a target population of 214 people; the study examined 130 correspondents out of 139 respondents that were issued with the questionnaire. This gave a return rate of 93.5% this gave a reliability test of 0.89 using the Cronbach's Alpha formulae as shown in table 2.1

2.3 Demographic Information of the Respondents.

The data used in this study was drawn from a sample population of 130 of construction industry employees. The sampled respondents were 130 employees (n=130) achieved by the use of Sloven's formulae with a 95% confidence level. Given that the questionnaires were administered personally by the researcher, it was noted that 93.5% of the questionnaires were appropriately filled. The demographic characteristics of the employee's respondents were summarized below.

Table 2.1: Showing gender and age in percentages

Gender					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	69	53.1	53.1	53.1
	Female	61	46.9	46.9	100
	Total	130	100	100	
Age					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18-30 years	55	42.3	42.3	42.3
	30-40 years	47	36.2	36.2	78.5
	40-50 years	28	21.5	21.5	100
	Total	130	100	100	

The exploratory data analysis in the table 2.1 above reveals that there were more male respondents who took part in the study than their female counterparts; 53.1% of them were male and only 46.9% of them were female but nearly balanced showing gender rule was observed among the people. Majority (42.3%) of the respondents were aged between 18-30 years. (36.2%) of the respondents were aged between 30-40 years and (21.5%) of the respondents were between the age of 40-50 years. This information has been demonstrated in table 2.1.

Table 2.2: Showing analysed result of duration of work in construction industry

Duration of work in the construction Industry					
		Frequency	Percent	Valid per cent	Cumulative per cent
Valid	1-3 Years	38	29.2	29.2	29.2
	4-6 Years	37	28.5	28.5	57.7
	7-8 Years	31	23.8	23.8	81.5
	Over 9 Years	24	18.5	18.5	100
	Total	130	100	100	

The exploratory data analysis in the table 2.2 above reveals (18.5%) of the respondents had over 9 years of working experience in construction Industries. (29.2%) of the respondents had worked in construction industry between 1-3years.

(28.5%) of the respondents had worked in the construction industry between 4-6 years. (23.8%) of the respondents had worked in construction industry between 7-8 years and (18%) of the respondents had experience of over 9 years in construction industry. This shows that the necessary experienced required for construction at all levels were available with regards to the project therefore effective management of the project. This information has been demonstrated in table 2.2

Table 2.3: Showing the level of education of correspondents in percentages.

Level of Education		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Tertiary	37	28.5	28.5	28.5
	Undergraduate	18	13.8	13.8	42.3
	Form Four Level	46	35.4	35.4	77.7
	Primary School Level	29	22.3	22.3	100
	Total	130	100	100	

The exploratory analysis for level of education of the respondents in the table 2.3 above reveals that majority (35.4%) of the respondents are form four level certification. Also, (28.5%) of the respondents has tertiary education, 13.8% of the respondents had undergraduate level certification. 77.7% of the respondents have at least the form four level certification. 42.3% of the respondents have at least tertiary and degrees.

2.4 Likert Scale Results

The construction employee's respondents were presented with statements that had measure the different levels on a Likert-scale. The respondents were to choose from 5-point score; strongly agree (SA), Agree (A), Neutral (N), Disagree (D) and Strongly Disagree (SD). The respondents were asked to score on each statement based on their perception on the statement regarding resource capacity influence on implementation of market shade construction. The researcher computed percentage frequencies of the responses from the students and was tabulated as shown below.

2.5 The influence of resource capacity on implementation of market shade construction project in Mageta Island, Siaya County

2.5.1 Bottleneck resources

Table 2.4: showing result analysed of bottleneck resources from correspondents in percentages.

No	Items	SA	A	N	D	SD
1	The company had enough resource capacity for construction of market shade	64	18.5	6.6	5.6	5.2
2	Other construction site had similar capacity within the island.	40.2	40.9	7	7.7	4.2
.3	In case of inadequate resource capacity the company provided for an alternative? E,g machine break down .	15.4	16.8	26.6	6.6	34.6
4	The alternative was appropriate	51	25.9	9.8	7.3	5.9
5	The alternative had an impact on the output of the construction of market shade	8.4	18.9	31.8	13.6	27.3

From the findings in table 2.4, although 82.5% of the respondents held the opinion that the company had enough resource capacity to construct a market shade. While, 10.8% of the respondents did not agree that the company had enough resource capacity to construct market shade. 6.6% of the respondents were not sure if the company had enough resource capacity to construct market shade. These showed that the company had the ability to carry out the work in terms of their material ability. In general majority were of true opinion that the company had enough resources to construct market shade, the findings of this study established a significant population 81.1% of the respondents agrees that other construction site had similar resource capacity within the island. Implying only 18.9% of the respondents were not sure or

did not agree that other construction site had similar resource capacity within the island. Also, there is a significant percentage (41.2%) out of the entire population disagreed with the statement of In case of inadequate resource capacity the company provided for an alternative. Only 32.2% agree that in case of inadequate resource capacity the company provided for an alternative. These means that the company either provided for alternatives but the workers were not aware of such alternatives therefore they were not able to differentiate the then with normal as shown by majority at 76.9% agreeing that they were appropriate leading to effective completions of the activities. While 26.6% of the respondents not sure to take a stand on whether In case of inadequate resource capacity the company provided for an alternative while 13.2% had a different opinion. This showed that the operations of activities did not stop. However, 40.9% of the respondents did not agree that the alternative had an impact on the output of the construction of market shade, against 27.3% who agreed that the alternative had an impact on the output of the construction of market shade, showing that alternatives provided did not bring much impact to the works done.

2.5.2 Correlation between the Market Construction and Resources.

Table 2.5: Showing correlation results analyzed between bottleneck resources and market shade construction

		Market shade construction	Bottleneck resources
Market shade construction	Pearson Correlation	1	.957**
	Sig. (2-tailed)		.000
	N	130	130
Bottleneck resources	Pearson Correlation	.957**	1
	Sig. (2-tailed)	.000	
	N	130	130

To address the first objective of the study, the null hypothesis "There is no statistically significant relationship between bottleneck resources and **market shade construction project in mageta island, Siaya County**." was tested. To do this a correlation analysis was conducted. The set scores on the bottleneck resources were used as the independent variable while scores from market shade construction was used as the explanatory variable (dependent variable). The results of the correlation are presented in table 2.5.

The Pearson Product-Moment correlation coefficient (r = .957) computed indicated that there was high positive correlation between bottleneck resources availability and **market shade construction project in mageta island, Siaya County**. The analysis revealed highly significant ($p < 0.05$) positive relationship between bottleneck resources and **market shade construction project in mageta island, Siaya County**, with high levels of associated with the fact that the company had enough resource capacity for construction of market shade, other construction site had similar capacity within the island, the alternative had an impact on the output of the construction of market shade and that in case of inadequate resource capacity the company provided for an alternative? E,g machine break down.

2.5.3 Supply and demand

Table 2.6: Showing analyzed data of supply and demand in terms of percentages

No	Items	SA	A	N	D	SD
1	All the resources needed for the market shade construction were available in the island	13.6	13.6	12.6	29	31.1
2	There were many sources of such resources needed for the construction of market shade	4.9	10.1	9.4	32.9	42.7
3	The demands for the resources were high as well as other construction sites within the island	39.5	10.5	25.5	15.4	9.1
4	The supply of the resources for the construction of market shade was high	37.8	14.3	26.9	14.6	6.3
5	Prices of the resources were affected by the supply and demand for similar resources within the island	22.4	33.9	11.9	24.1	7.7

From the findings in supply and demand table 2.6 above, a significant number of the respondents (60.1%) disagreed that all resources needed for the market shade construction were available in the island 27.2% held the opinion that not all the resources needed for the market shade construction were available in the island. This means that not all the resources needed for construction were of low supply but some materials such as water, labour, sand and other materials were found within the island. 75.6% of the respondents held an opinion that there were few sources of such resources needed for the construction of market shade. Only, 15% of the respondents had a different opinion. This means that within the island there is no reliable sources of materials for construction which are ready, the sources that are available require other methods to produce and output resources that be used. However, 50% of the respondents agreed that the demands for the resources were high as well as other construction sites within the island against 24.5% who disagreed. Meaning that other sites for construction was in high demand for the few available resources that would be found within the island. The study established that 51.1% of the respondents suggest that then supply of the resources for the construction of market shade was high while 20.9% of the respondents suggest that the supply of the resources for the construction of market shade was low. However, a significant number 56.3% of the respondents agree that the prices of the resources were affected by the supply and demand for similar resources within the island. This means that the contractor was paying his people on time whenever the supply of materials was delivered on time.

Therefore, to address the objective of the study, the null hypothesis "There is no statistically significant relationship between supply/demand and **market shade construction project in mageta island, Siaya County**." was tested. To do this a correlation analysis was conducted. The set scores on the supply and demand were used as the independent variable while scores from market shade construction was used as the explanatory variable (dependent variable). The results of the correlation are presented in table 2.7

Table 2.7: Showing correlation results analyzed between supply and demand and construction of market shade construction

		Market shade construction	Supply and Demand
Market shade construction	Pearson Correlation	1	.867[**]
	Sig. (2-tailed)		.062
	N	130	130
Supply and Demand	Pearson Correlation	.867[**]	1
	Sig. (2-tailed)	.062	
	N	130	130

The Pearson Product-Moment correlation coefficient (r = .867) computed indicated that there was a positive correlation between supply/demand and **market shade construction project in mageta island, Siaya County**. The analysis revealed highly significant (p > 0.05) positive relationship between supply/demand and **market shade construction project in mageta island, Siaya County**, with high levels of the fact that the supply of the resources for the construction of market shade was high.

2.5.4 Sequenced delivery

Table 2.8: Showing results analysed of sequence delivery in terms of percentages.

No	Item	SA	A	N	D	SD
1	Management had a delivery work plan on site	51.9	27.8	4.3	7.8	8.2
2	Management delivering required materials on time	59.8	30.4	3.5	3.1	3.1
3	In case of delay the management had good communication to workers prior to the effects.	32.5	38.1	8.7	17.1	3.5
4	Communication delivered was accompanied by the methods of compensation of the works not accomplished as scheduled	58.4	33.2	4.8	3.5	0.3
5	Alternative was welcomed by the workers	60.5	28.7	7.7	2.8	0.3

From the findings in supply and demand table 2.8 above, a significant number of the respondents (79.7%) agreed that management had a delivery work plan on site, 90.2% agree that Management delivering required materials on time 6.2.2% held the opinion that the Management delivering required materials was not time. This means that the company was well organized with their work and workers were supplied promptly with materials on site hence avoidance on delay of various activities. However, 70.6% agree that In case of delays on the supply the management had good communication to workers prior to the effects. Against 20.6% who held a different opinion. This means that there was a good relationship among the parties involved starting from the supplier to the contractor and his workers. For the few percentages that were not able to receive communication early this may have resulted from late communication addressed by junior staffs at personal level but not at the assembly before the works starts. 71.6% of the respondents agree that communication delivered was accompanied by the methods of compensation of the works not accomplished as scheduled. This means that both parties were satisfied with the methods incorporated. More importantly, the 80.2% of respondents agree that Alternative was welcomed by the workers making the works to move at a greater progress.

III. CONCLUSION

3.1 Demographic data

Majority of people employed in the market shade construction project were male at 53.1 % and female of 46.9%, this conforms with the gender rule of at least two thirds of the opposite sex representation. Majority of the employees were bellow age thirty but of legal age of 18 at 55%. The duration of employees working in construction was relatively distributed even though majority had less than three years' experience but having 55% of respondent with over seven years experienced shows the site had good number of technical workers with technical experience in the field. Majority of the workers had form four certificate indicating availability of more skilled and non-skilled labour, the 18% undergraduate were at the top managerial levels and tertiary at 37 per cent showed a great percentage of technical staff. These combinations indicate that the site was managed properly at all levels because the knowledge and skills required would easily be found due to distribution of knowledge required at all levels. In addition, activities were well distributed as per the capacity of each individual required.

3.2 Resource capacity and performance of market shade construction project

From the findings in table 2.4, 82.5% of the respondent had an opinion that the construction firm had enough resources to carry out the construction, in addition majority at 81.1% had an opinion that the company carrying out the construction of market shade were having better resources than other firms this may have resulted from huge accumulation and supply of materials on time for the construction workers. A small percentage of the respondent at 27.3% had the feeling that an alternative method employed had an impact on the construction site, this may mean that the methods which were being incorporated may not be familiar with the workers on site therefore they had no impact on the result.

Moreover, from table 2.6, majority of the respondent disagree at 60.1 % that resources needed for construction material not all of them were available within the island, the 27.2% who had an opinion of the materials being available may have had such opinion because the island had a hardware that supplied the construction material. For the majority they may believe that the market required other materials which were not available within the island such as special steel members, in addition they had an opinion that the hardware had only capacity to supply materials at small scale. In addition, the respondent had an opinion that the market shade construction project had huge demand for the materials and suppliers, this was because the methods of payment was being done upon delivery therefore workers and suppliers had confidence on the firm hence affected the prices. Many suppliers were willing to increase the prices to the firm since they were paying on time at the same time they were working on a tight schedule. Due to the monopoly of some resources that were very expensive to ship from outside the highland the suppliers would increase the prices of a product at a critical time knowing they would be paid in return others would follow suit. Table 2.8 shows generally that the construction company of the market shade construction project had a proper sequence delivery program, this is indicated by more than 50% of respondent in all the questions asked to the respondents this explains the reason why the project was completed on time as the works were planned for and adhered to ensure successful delivery.

Using Pearson product moment correlation coefficient to analysis the relationship, there was a positive correlation between resource capacity and implementation of market shade construction project. This means that for a company to

implement a project successfully and on time the capacity of a company will play a big role. In addition they must arrange for their activities on time and always be ready to use alternatives to avoid the project stalling.

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