Resource Management Practices And Construction Projects Performance In Rwanda Case Of Land Survey Engineering Consultancy Limited

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Abstract- This paper intended to   investigate the influence of resource management practice on construction projects in Rwanda, a case of land survey and engineering consultancy Ltd with specific objectives of identifying the factors that influence resource management practices on construction projects performance, to assess the impact of resource management practices on construction projects performance and to determine the effects of resource management skills on performance of construction planning. The target population was a total of 168 members that included 53 project managers, 110 project owners and 5 staff members at LSEC Ltd. The researcher utilized random sampling techniques for project managers and purposive sampling to select the project owners and staff member at LSEC Ltd. The researcher also used Yamane formula to determine the sample size of all the population. Data was analyzed into tables and graphs applying descriptive statistics (frequencies, percentages and mean) by statistical tools such SPSS 21.0 for windows served for data analysis. Findings shown that resources managements were highly related with the performance of construction projects in land surveying and engineering consultancy limited as it is proved by the Pearson correlation coefficient(r) of 0.941 which indicated that they are strongly positively and statistically significant means that the well-dressed resource management strategies enhance the construction projects performances in LSEC Ltd The findings also found that all variable are coherent with the projects performance affected with different resource management strategies as it is shown by the regression analysis model with Square of 0.886 means that the resource management practices were appreciated to enhance , promote the construction projects in LSEC Ltd. This research recommend to the government to establish the policy on resource management for public and private institution to ensure that there is successful and same resources managements strategies used to promote the all projects performances All construction companies must use resources practices and indicate how each resource is used and respected to meets their projects success.

Index Terms- Project resources, Construction project, the project performance, Resource management practices

I. Introduction

The Rwandan construction industry has occasionally been blamed for general poor quality and there is absolutely lack of general quality assurance in the industry (Dindi, M.A. 2004). In the face of all these challenges, resource planning is now deliberated to be one of the frontiers for cost lessening to advance curativeness and efficiency. The Construction business is progressively turning to be cutthroat and noble organization norms are vital for those who want to remain competitive. However, the essential and desired site resource characteristics (resources attributes) of correct worth, accurate amount, exact period and realistic price are manifestly unusual on construction projects in Rwanda. Can the Rwandan contractor/developer adequately manage resources for specified tasks on the site? The research assessed the relationships between extent of resources Planning and construction projects performance in Rwanda resources attributes (availability, right quality, reasonable cost, minimal surplus and minimal wastage) for concreting resources (ballast, Sand, Cement, steel and water) on construction projects performance in Rwanda.

Costly labor delays experienced due to the required quantity and quality of resources not being available could lead to increased price show scamper and overall delay in constructions project and could also affect the quality of the constructed facility.

In Rwanda, there are many projects meet many challenges such as failure due to poor planning. Procurement practice procedure, unqualified human manpower and disrespect of projects timeframes, deviation of resources in private institutions like Land surveying and engineering consultancy limited so in LSEC Ltd has implemented many projects such as construction projects, health improvement infrastructure projects than they can promote the engineering service in all districts and the overall effect of poor resources attributes could. At worst, for the contracted projects, it could also lead to protracted legal battles and arbitration due to price and period over shots, and inferior class of project so The researcher decided to assess the impact of resources managements on constructions projects performance in Rwanda. The main purpose of this research was to assess the effect of resource management practices on construction projects performance in case of land surveying and engineering

consultancy company and it was guided with the following specific objective:

i. To determine the resource management planning factors that influence construction projects performance
ii. To investigate the effects of resources management practices on constructions projects performance
iii. To assess the resource management skills needed to enhance construction project performance
iv. To determine the relationship between the resource management practices and constructions projects performance.

II. LITERATURE REVIEW

2.1 Theoretical Literature
2.1.1 Resource management practices

The resource management practices is defined as the process of using all materials in an effective way with respect of time in the implementation of the projects for the production of deliverable materials with good quality, for attaining the designed strategic plan to reach the business objectives and financial plan, it requires the full resource allocation and proper way of their uses specifically with the population due to that the human resources play a big role in the implementation and execution of the projects therefore any projects need human resource with a big package of knowledge, skills attitude , culture and value to complete the projects activities (Carlos et al., 2014).

2.1.2 Performance construction projects factors

There are many factors to be taken into accounts and that can affect positively the constructions projects performance and those factors are maintained as pivot of the constructions projects performance and also help the project managers and implementers to enhance the opportunity to get more planned (Dvir, 2013).A set of determined criteria shown more chance to succeed or to fail the projects in an organizations and the big factors to be considered is the time to be taken for construction projects implementation for more outcomes (Westerved,2013).

2.2 Empirical Literature
2.2.1 Resource management practices and project performance

Kasim et al,.2005 stated that the main factors impacting the projects performance is the undressed ways to handle and manage the resources on the project's sites, he conclude that it is significantly important to execute all available resources from the prepared stages to the constructions stage. Lowly handle of constructions resources impact all step of projects performance in term of schedule, financials, budgets, quality and productivities, the wastages of projects resources should be also reduced in the constructions activities in order to prevent the losses of income for constructions company (Nagapan et al., 2012).

More strategies of resource practices are highly appreciated in the fast tracks of constructions project to enhance and promote the service delivery of productivity (Hemsworth et al,.2006) who indicated that standardizations of resources of the project played a big role in the paying departments decisions. Resource managements are made challenging by resources shortage, delay in supplying, cost fluctuation, damaging and waste management, insufficient space for storing all materials (Kasim et al.,2005) therefore there is need of the well-developed strategies including more information technologies to manage resources in different constructions project.
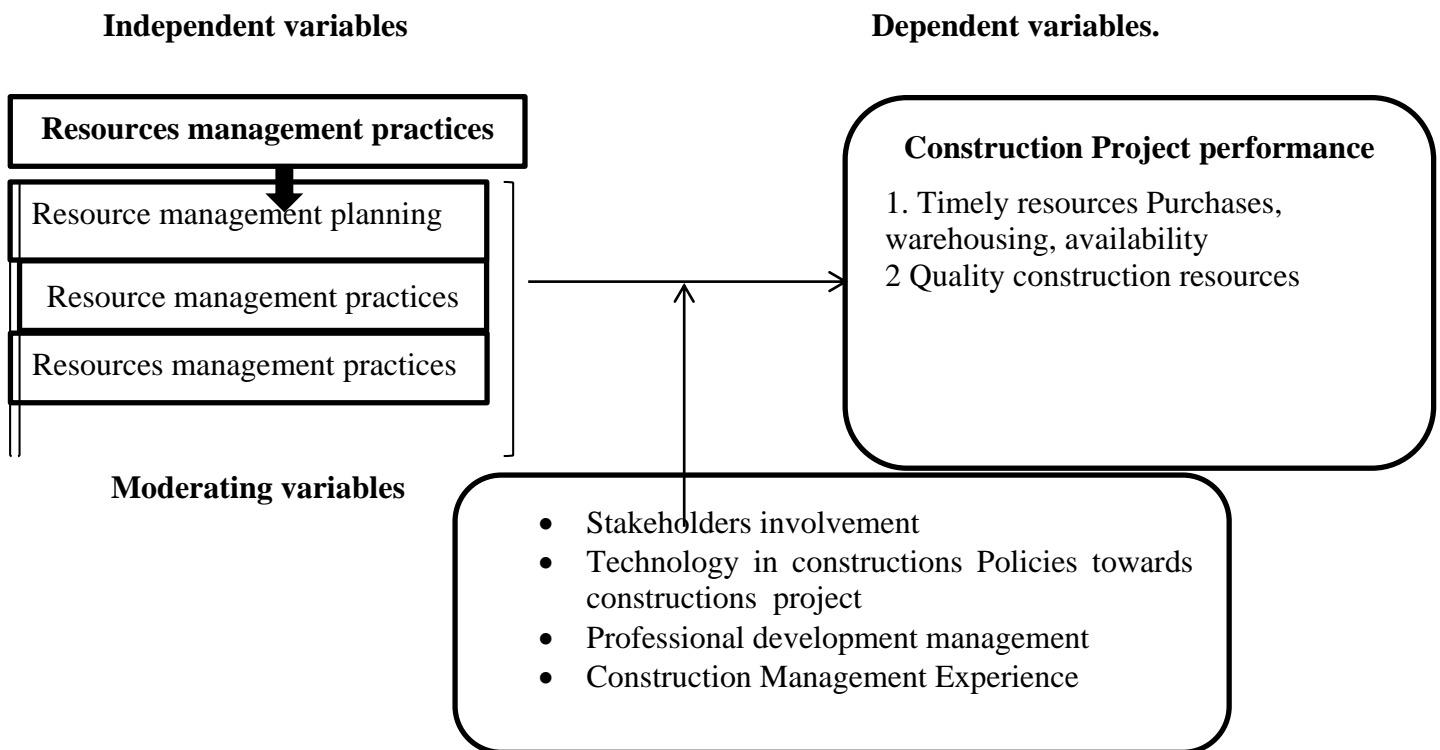
A challenges faced constructions project is resource and materials poorly managed and delay of most of projects activities therefore there is a need of creation of decentralized, coordinated , controlled tracking and good monitoring system of resource managements in the companies and the site oriented , proper awareness and accountable system may be created within the companies with the respect of 3M(Money, Machine ,Manpower) in the constructions are very important(Meghani et al.,2011).

2.3 Theoretical framework

Banjoko (2004)stated that the concept are the resources functions, planning, scheduling, buying, storing, moving and distributing where The workshop spelt out the specific objectives of resource management practices as contributing to increases in profitability by coordinated achievement of less total resources cost. It is evident from the analysis above that the interrelationship of each activity with several or all of the functions is an essential ingredient in serving the resources s needs of the organization.

2.4 Conceptual framework

Task execution, which in this investigation, implies how much outcomes have been accomplished (Chitkara 1998) comprises of various estimation pointers, for example, better man hour yield, amazing tasks, fitting venture cost, convenient undertakings conveyance, auspicious resources accessibility, appropriate resources warehousing, methodical resources control, opportune resources buys, convenient provider request and better undertaking arranging(Acharya et al., 2006). The corresponding connection between resources administration arranging and development ventures execution could be influenced by different factors outside the control of task the executive.

Independent variables   **Dependent variables.**

Source: Primary Data, 2021
Figure1: Conceptual framework

These elements incorporate the predominant world of politics and government enactment at the season of undertaking execution, which are not destined to be steady, much the same as the worldwide economy and could influence smooth usage of the venture. Generally speaking, putting the presentation estimation parts to utilize, the status of different parameters of task execution are ceaselessly given, benefiting a chance to make vital changes in accordance with make undertaking progress.

III. RESEARCH METHODOLOGY

3.1 Research Design and Population

This study descriptive design were used and It is an approach of gathering data through giving interviews or questionnaires to sampled individuals. This approach is utilized to gather data regarding the attitudes of people, their opinions, their habits and social issues like education. Target population is any collection of institutions, people or items that have shared features (Ogula, 2005). The population of this study comprised the 168 of respondents including 110 project owners and 5 staff of LSEC Ltd and 53 projects managers where the questionnaire will be

administered to the sampled project owners, projects managers and interviews for staff at LSEC Ltd

3.2 Sample design

Denscombe, (2008) asserts the choice of sample deserves attentive hints in withdrawing from entire group and to provide information that can scientifically be tested. The number of respondents was sampled using the Yamane formula (1970). This formula involves calculating the sample size from target population: when the population is 168, the possible samplewere118 respondents.

$$n = \frac{N}{1 + N(e)2}$$

Source: Yamane, 1970
N: stands for the target population/ population size of the study
e: is the level of precision equals to (5%)
n: Sample size
n: Sample size

$$n = \frac{168}{1 + 168(0.05)^2} = \frac{168}{1 + 168(0.05)2} n = 118$$

Table 1Targeted population and sample size

Group of respondents	Targeted population	Percentage (%)	Sample size
Project managers	53	31.54	38
Project owners	110	65.47	77
LSEC Ltd	5	2.99	3
Total	168	100	118

Source: Primary Data, 2021

IV. RESEARCH FINDINGS AND DISCUSSION

4.2 Presentation of Findings

This part were based on the specific objectives of this research to meet the main objectives of the study, the specific objectives of this research were based on the identification the resource management factors influence on construction projects performance, the assessment the effects of resource management practices on construction projects performance and determine relationship between the resource management and constructions projects performances , the findings were discussed and presented for each specific objective.

4.2.1 Factors influencing resources practice on construction projects performance

The first objective of this study were based on the factors that influence resource management in the construction projects performances in the land surveying and engineering consultancy limited,

Table 2 Resources managements factor

Statements	SD		D		N		A		SA		Mean	St.de
	Fr	%	Fr	%	Fr	%	Fr	%	Fr	%		
Cost Management	14	12.2	10	8.7	6	5.2	24	20.9	61	53.0	3.939	1.4283
Time Management	2	1.7	2	1.7	1	0.9	41	35.7	69	60.0	4.5043	.76518
Timely resources Purchases & warehousing.	26	22.6	5	4.3	12	10.4	55	47.8	17	14.8	3.2783	1.39892
Quality control for construction resources	5	4.3	8	7.0	8	7.0	60	52.2	34	29.6	3.9565	1.02076
Improved waste management	11	9.6	22	19.1	12	10.4	45	39.1	25	21.7	3.4435	1.28549
Professional development management	6	5.2	2	1.7	3	2.6	42	36.5	62	53.9	4.3217	1.00479
Supplier management and optimization	8	7.0	6	5.2	1	0.9	24	20.9	76	66.1	3.8158	1.05465

Source: Primary Data, 2021

during data collections , the respondents were asked to show their views on different factors that influence the resource management practices on their construction projects implemented by their company. The results revealed were summarized in the table 2. All results are shown in the table 2 where the factors influencing resource management practices are highlighted and the first was cost management for materials and human resources therefore the majority 73.9% of respondents were accepted that the cost managements were useful factors in the construction projects performances and 20.9% of participants were disagreed the statements that they do not know if they used cost management in their construction projects while the 5.2% of participants were neutral means that they do not want to show their side either agree or agree therefore this factors had mean of 3.939 and its standard deviation of 1.4283 which high mean indicating that the cost

managements factors were highly appreciated in the construction projects.The second revealed factor was the time management; the results indicated that the majority 95.7% of participants were raised that the time is a main factors respected in their company by saying that everything done in the land surveying and engineering consultancy consider the time frame for the activity which facilitate them to meet their construction projects performance while the 3.4% of respondents were indicate that they do not aware of how time management is used in their company while the 0.9% of participants did not say anything on this statement and this statement have a mean of 4.5043 and its standard deviation of 0.76518 means that the time management have high percentages to accept that it is good factor to accomplish the construction projects .

4.1.2 Impact of resource management practices on construction projects performance

The second objective of his study were based on the assessment of impact of the resource management practices on the performance of construction projects   and the findings were indicated in the table 3 which the respondents raised the perceptions and understanding of how their construction projects are impacted with different resource management practices on their implementation   in land surveying and engineering consultancy company.The findings revealed that there is an impact of the resources managements' factors on the construction projects performance and the results revealed are summarised in the table 3 the researcher wanted to know if there is impact caused by the cost management on the projects performance and the 90.4% of participants   accepted that Cost Management enhance the construction projects success in different projects with how the resources are priced at market and how the human resources are paid their salaries and their incentives   therefore the cost management factors are highly appreciated with many respondents and the 6.9% indicated that they are not sure on how cost Management enhance the construction projects success while the 2.6% of respondents were neutral on how the cost management impact projects performance in Rwanda and also

Table 3 Impact of resource management practices on construction Projects performance

Statements	SD Fr	%	D Fr	%	N Fr	%	A Fr	%	SA Fr	%
Cost Management enhance the construction projects success	6	5.2	2	1.7	3	2.6	42	36.5	62	53.9
Time Management help you in the performances of construction project	3	2.6	6	5.2	3	2.6	45	39.1	58	50.4
Timely resources Purchases, warehousing, availability facilitate in the projects performances	3	2.6	5	4.3	10	8.7	41	35.7	56	48.7
Quality construction resources orients the projects	19	16.5	14	12.2	12	10.4	50	43.5	20	17.4
Improved waste management provides facility in the construction project success	7	6.1	3	2.6	9	7.8	65	56.5	31	27.0
Professional development management skills facilitate in the projects performances	14	12.2	9	7.8	5	4.3	49	42.6	38	33.0
Supplier management and optimization impacted the projects performance	11	9.6	22	19.1	12	10.4	45	39.1	25	21.7

Source: Primary Data, 2021

The time management is also other factor that can influence the projects performance in Rwanda where the 89.5% of the participants were aware on how the time Management help the companies in the performances of construction project and the 7.8% of participants were not sure if the timeframe can contribute to the projects performance while the 2.6% of respondents were neutral on how time management help companies in the performances of construction project means that the more respondents agreed that the projects need to work with the detailed timeframe and should be respects therefore any work is implemented with scheduled duration to meet the projects activities at specific time .

4.2.3 Resource management skills to enhance constructions projects performance

The third objective of this research projects were to determine the relationship between the resource management skills and construction projects performance in Rwanda especially the projects implemented in land surveying and engineering consultancy limited and the findings were indicated in the table 4 which the respondents raised the perceptions and understanding of how their construction projects correlate with different resource management skills on their implementation process.   The correlation of cost managements and the construction projects performances was established at first stage and the results are summarised in the table 4

Table 4 Correlations of cost management and construction projects

Statements		Cost Management skills	construction Project performance
Cost Management skills	Pearson correlation	1	.909**
	Sig. (2-tailed)		.000
	N	115	115
construction Project performance	Pearson correlation	.909**	1
	Sig.(2-tailed)	.000	
	N	115	115

Source: Primary Data, 2021

The results indicated in the table 4 shown the perceptions of respondents on the correlation between cost management strategies towards the construction projects performance. It was revealed that there was a significant correlation with P- value of 0.000 which is less than 0.05 as level of accuracy therefore there was a very high degree of positive correlation as it is proved by the karl Pearson correlation coefficients (r) which was 0.909 means that the cost managements factors is highly appreciated in the construction projects performances and the table 5 highlight the correlation between the projects duration and construction projects performance and the findings are indicated in the table 5 The results indicated in the table 5 shown the perceptions of respondents on the correlation between time management strategies towards the construction projects performance. It was revealed that there was a significant correlation with P- value of 0.000 which is less than 0.05 as level of accuracy therefore there was a very high degree of positive correlation as it is proved by the Karl Pearson correlation coefficients (r) which was 0.800 means that the time managements factors is highly encouraged to

be respected in the construction projects performances. And also the correlation was found to how timely resources Purchases, warehousing, availability influence the construction projects performances, the results are indicated in the table 4.8.The results indicated in the table 4.8 shown the perceptions of respondents on the correlation between Timely resources Purchases, warehousing, and availability strategies towards the construction projects performance.

It was revealed that there was a significant correlation with P- value of 0.000 which is less than 0.05 as level of accuracy therefore there was a very high degree of positive correlation as it is proved by the Karl Pearson correlation coefficients (r) which was 0.852 means that the Timely resources Purchases, warehousing, availability factors is highly encouraged to be respected in the construction projects performances And also the correlation was found to how Improved waste management influence the construction projects performances, the results are indicated in the table 6

Table 5 Correlations of Time Management and construction projects

Statement			construction performance	Project Time Management skills
construction performance	**Project**	Pearson correlation	1	.800**
		Sig. (2-tailed)		.000
		N	115	115
Time Management skills		Pearson correlation	.800**	1
		Sig.(2-tailed)	.000	
		Pearson correlation	115	115

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data, 20

Table 6Correlations of Timely resources Purchases, and construction projects

Statement		construction performance	Project	Timely resources Purchases, warehousing, management skills
construction Project performance	Pearson correlation	1		.852**
	Sig. (2-tailed)			.000
	N	115		115
Timely resources Purchases, warehousing skills	Pearson correlation	.852**		1
	Sig.(2-tailed)	.000		
	Pearson correlation	115		115

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data, 2021

The results indicated in the table 6 shown the perceptions of respondents on the correlation between improved waste management strategies towards the construction projects performance. It was revealed that there was a significant correlation with P- value of 0.000 which is less than 0.05 as level of accuracy therefore there was a very high degree of positive correlation as it is proved by the Karl Pearson correlation coefficients (r) which was 0.837 means that the Improved waste management factors is highly encouraged to be respected in the construction projects performances And also the correlation was found to how Quality control construction resources facilitate the construction projects performances, the results are indicated in the table 7

Table 7Correlations of Improved waste management and construction projects

Statements			construction performance	Project Improved waste management skills
construction performance	Project	Pearson correlation	1	.837**
		Sig. (2-tailed)		.000
		N	115	115
Improved waste management skills		Pearson correlation	.837**	1
		Sig.(2-tailed)	.000	
		Pearson correlation	115	115

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data, 2021

Table 8Correlations of Improved waste management and construction projects

statements			construction performance	Project Quality construction resources skills
construction performance	Project	Pearson correlation	1	0.870**
		Sig. (2-tailed)		.000
		N	115	115
Quality construction resources skills		Pearson correlation	0.870**	1
		Sig.(2-tailed)	.000	
		Pearson correlation	115	115

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data, 2021

The results indicated in the table 8 shown the perceptions of respondents on the correlation between Quality construction resources strategies towards the construction projects performance. It was revealed that there was a significant correlation with P- value of 0.000 which is less than 0.05 as level of accuracy therefore there was a very high degree of positive correlation as it is proved by the Karl Pearson correlation coefficients (r) which was 0.870 means that the Quality construction resources factors is highly encouraged to be respected in the construction projects performances.

4.2.4 Correlation of variables

This research highlighted two variables which are independents variable and dependents variables where independent variable were resource management practices and the dependent variable were construction projects performances therefore the researcher intended to know how the two variables were correlated and their regression analysis model

The table 9 shown that resources managements were highly related with the performance of construction projects in land surveying and engineering consultancy limited therefore it was indicated with the Pearson correlation coefficient(r) of 0.941 which was found with p value of 0.000 of a 2-tailed variables to indicate that they are strongly positively and statistically significant means that the well dressed resource management strategies enhance the construction projects performances in LSEC Ltd and it were supported with reviewed studies like Hall(2005) who stated that more resource management practices strategies should be established to meet the needs of projects success in the organization like LSEC Lt

Table 9Correlations of variables

Statements			construction performance	projects Resource practices	management
construction performance	projects	Pearson Correlation	1	.941**	
		Sig. (2-tailed)		.000	
		N	115	115	
Resources practices	managements	Pearson Correlation	.941**	1	
		Sig. (2-tailed)	.000		
		N	115	115	

**. Correlation is significant at the 0.01 level (2-tailed).

Source: Primary Data, 2021

Table 10.Regression analysis Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.941[a]	.886	.885	.44717	.390

a. Predictors: (Constant), resources managements

b. Dependent Variable: construction projects performance

Source: Primary Data, 2021

The findings also found that all variable are coherent with the projects performance affected with different resource management strategies as it is shown by the regression analysis model with Square of 0.886 means that the resource management practices were appreciated to enhance , promote the construction projects in LSEC Ltd.

V. CONCLUSION AND RECOMMANDATIONS

5.1Conclusion

This research expresses the whole perceptions of resources practice on the construction projects performance in Rwanda a case of land surveying and engineering consultancy limited and as conclusion , all respondents indicated that there is a need of different resources practices establishment to facilitate the construction projects performances , research revealed that more use resource management facilitate the project performances easily and faster and the third objective indicated strong positive correlation of the resources managements and construction projects performance therefore any organization should establish proper and clear resource management practices strategies to promote, enhance the projects ongoing and their performance.

5.2 Recommendation of the Research

The recommendation was made as follow: This research advise the government to establish the policy on resource practice for public and private institution to ensure that there is successful

and same resources practice strategies used to promote the all projects performance. All construction companies must use resources practice and indicate how each resource is used and respected to meets their projects success. The ministry of infrastructure should establish clear and proper measures to the use of resource management practices to enhance good service delivery in the construction area. It recommends that the policy makers to enhance the awareness of contractors' implementation strategies for successful delivery of construction projects success awareness of the community to involve in construction projects success. To respect the resource management practices to ensure projects proposed are completed and are done with the highest standard

REFERENCES

[1] Acharya Narimah Kasim, Siti RadziahLiwan, Alina Shamsuddin and Rozlin ZainalandNaadira Che Kamaruddin,(2006). Improving On-Site Materials Tracking for Inventory Management in Construction Projects: Proceedings International Conference of Technology Management, Business and Entrepreneurship

[2] Amin.R.(2015).Business logistics/supply chain management. Planning, organizing and controlling the supply chain (5th ed.). USA: Pearson-Prentice Hall

[3] Banjoko S. A. (2004).Production and Operations Management: Sabon Publishers, Lagos

[4] Bell, L.C. and Stukhart, G. (1986).Attributes of materials management systems. Journal of Construction Engineering and Management

[5] Bell,F, Akintoye, A., McIntosh, G. and Fitzgerald, E. (2016).A Survey of Supply Chain Collaboration and Management in the UK Construction Industry. European Journal of Purchasing and Supply Management

[6] Bernard,. (2002). Construction Material Management on Project Sites.National Conference on Recent Tends in Engineering and Technology.

[7] Burns & Grove, (1993.Project Materials Management: Texas, The Construction Industry Institute.

[8] Carlos K. C. Okolie, J. U. Ezeokonkwo, (2014). Effects of Materials Management on Building Productivity in SE Nigeria: PM World Journal

[9] Chan.B, R., Babai, M., & Syntetos, A. (2012). ABC Classification: Service Levels and Inventory Costs. Production and Operations Management

[10] Chitkara. C. David, Martinez-Lorente Angel R., Clavel José G. (2018).An Empirical Study on the Impact of Standardization of Materials and Purchasing Procedures on Purchasing and Business Performance", Supply Chain Management: An International Journal. Q Emerald Group Publishing Limited

[11] CII, M.A. (2018).Quality Management: a challenge for the Kenyan Construction industry. Unpublished M.A. research project, University of Nairobi.

[12] Cooke.M, A., Biger, N., & Mathur, N. (2009). The relationship between working capital management and profitability evidence from the United States: Business and Economic Journal

[13] Cryl, E.D. (2001).A materials management course for a graduate level construction management curriculum: ASC proceedings of the 37lh annual Conference University of Denver- Colorado, April 4-7, 2001. Denver, University of Denver

[14] Denscombe,I. (2008).Inform al labor in the construction industry in Kenya: a case of Nairobi. Research Report. Geneva, International Labor Organization (ILO).

[15] Dindi.M, (2004). Factors causing cost variation for constructing waste water projects in Egypt. Alexandria Engineering Journal

[16] Dvir,M.(2013).Material management by using SAP in real estate construction sector: International Research Journal of Engineering and Technology (IRJET)

[17] Edmeads, (2012). Construction Project Management: Planning, Scheduling and Controlling. Chick Press, India.

[18] Gadde. A. R., (2009). Improving materials management practices on fast-track construction projects. London, Association of Researchers in Construction

[19] Gichunge, H.K. &Masu, S.M. &K'Akumu, O.A. (2010). Factor cost indices practices in the building industry for Nairobi, Kenya: Journal of Financial Management of Property and Construction

[20] Gyula.V. (2012). Management for Construction Materials and Control of Construction Waste in Construction Industry: A Review. Int. Journal of Engineering Research and Applications Vol. 5, Issue 4

[21] Hemsworth.A. Agapiou, A., Clausen, L. E., Flanagan, R., Norman, G and Notman, D. (2006).The Role of Logistics in the Materials Flow Control Process:Construction Management and Economics

[22] Kambo and Tromp S. R. (2006). Impact of Material Management on Productivity A Case Study Journal of Construction and Engineering. Management.

[23] Kasim.N. Phani M T., S V. Mathew and S. Roy, (2005).Material Management in Construction – A Case Study: International Journal of Research in Engineering and Technology

[24] Kenny.T. (2017).A strategy for a computer-based materials management system for the building industry: Journal of Financial Management of Property and Construction

[25] Leesard (2011).Hall Marks in Construction Material Management.: Iosr Journal of Mechanical and Civil Engineering

[26] Ogula. U. (2005). Research Methods for Business: A Skill Building Approach. Fourth Edition. Singapore: John Wiley & Sons.

[27] Polit & Beck, S.A. (2004). Inventory management practices and their implications on perceived planning performance. International Journal of Production Research

[28] Safa, M.; Shahi, A.; Haas, C.T.; Hipel, K.W. (2014).Supplier selection process in an integrated construction materials management model. Automated Construction

[29] Safa.C. Deirbag, M., Bayraktar, E., Tatoglou, E., & Zaim, S (2014). The impact of supply chain management practices on performance of SMEs. Industrial management & data system

[30] Savolainien,T.(2012).Factors Affecting Material Procurement Supply and Management in Building Project of Pakistan: A Contractors Perspective

[31] Sobczak, E.(2018).Materials Management. A Synthesis and Current Review. Journal of Purchasing, February Edition

[32] Thomas.M et al.,(2011).Materials Management "As a Profit Centre"; Harvard Business Review. January-February, ed. Harvard-United States.

[33] Westerved, S. (2013). Optimization of floor-level construction material layout using genetic algorithms. Automation in Construction

[34] Yamane.H.Kenneth B.(1970). Methods of social research, Illustrated edition. New York: Free Press; London: Collier Macmillan

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