THE IMPACT OF COSTING TECHNIQUES ON PROFITABILITY OF CONSTRUCTION COMPANIES

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ABSTRACT

One of the measures of ensuring profitability in the construction industry is application reliable costing technique(s). The study examined the impact of costing techniques on profitability of construction contracts. It sought and extracted data from a Bill of Quantities prepared by an Umuahia based firm to be used by an Aba based construction company where unit rates of concrete mixes of 1:2:4, 1:3:6 and 1:4:8 – 19mm aggregate were used. These unit rates were recalculated using traditional costing technique and activity-based costing technique with a view to determining if there would be any distortion in profitability of the construction project as a result of applying the two afore-stated costing techniques. The study found out that there were no significant distortion in profitability of the project as a result of costing techniques used. However, the study found out that activity-based costing technique is preferable based on other attributes outside profitability of the projects. Thus, the study recommended t*hat construction companies should use both techniques as complements. The study also recommended that activity-based technique be used for tendering purpose to enable bidders incorporate overhead costs in clearer terms.*

Keywords: activity-based costing, bill of quantities, construction companies, profitability, traditional costing

1. INTRODUCTION

Costing is an integral part of the construction industry in Nigeria. It is a common knowledge that construction companies in the country use varying and suitable costing systems to bid for construction contracts. This is as a result of statutory provisions that insists on open and transparent competitive tendering of construction contracts in the public sector. Private clients are not left out of the competitive tendering processes in a bid to ensure that they get value for money.

Profitability is the ability of a business to earn a profit while profit is the money a business makes after accounting for all expenses. Hofstrand (2009) stated that profitability is the primary goal of all business ventures without which the business will not survive in the long run. Profitability is the major aim of setting up a construction company. It is key to the survival of the construction business. When a construction companies make profits, their workforce is properly remunerated and working conditions of the staff are enhanced. As profit making entities, contracting firms in the industry are also interested in accurate costing system that will ensure profit

maximization and cost minimization. More so, it is also a common knowledge that effective and efficient construction project performance can only be determined through appropriate costing systems.

Construction companies have a number of characteristics that are common to both manufacturing and service industry. Certainly, as in other manufacturing companies, there are physical products, and often times these products are of mind bogging size, cost and complexity. Having similar characteristics of manufacturing firms entails that construction companies are business organizations where costing and profit making are paramount. As business entities, construction companies are involved in building construction and mineral extraction; heavy and industrial engineering; mechanical and electrical engineering; civil and structural engineering; cost and production engineering; town planning and urban development; surveying and geo-informatics; environmental economics; landscaping and interior decoration; and the like. It therefore means that costing is an indispensable aspect of construction companies.

Nikhila (2021) defined costing as the classifying, recording and appropriate allocation of expenditure for the determination of the costs of products or services, and for presentation of suitably arranged data for the purposes of control, and guidance of management. No doubt, techniques are applied in costing to suit different terms and conditions. Lysons & Farrington (2006) stated that costing techniques are methods for ascertaining cost for cost control and decision-making purposes and that they can be applied to make-or-buy decisions, negotiation, price appraisal and assessing purchasing performance. Alsoboa, Al-Ghazza &Joudeh (2015) stated that costing techniques contain six items namely Activity Based Costing (ABC), Target Costing (TC), Attribute Costing, Life Cycle Costing (LCC), Cost of Quality (COQ), and Value Chain Costing (VCC) while Bragg (2020) stated that costing involves assigning both fixed and variable costs to an element of a business. Ayeni (1986) added unit and job costing as two methods of costing.

Ascertaining costs of services rendered by construction companies can be done using different methods of cost allocation. This will in no small measure affect profit margin of the company. However, the researchers opted for absorption cost on order method and Activity Based Costing (ABC) techniques. Absorption costing techniques captures all costs associated with manufacturing a particular product in an organization. Tuovila (2020) stated absorption cost is the traditional system of costing that allocates fixed overhead costs to a product whether or not it was sold in the period. On the other ABC assigns overhead and indirect costs to manufactured goods and services. Kenton (2020) stated that ABC enhances the reliability of cost data as it ensures a nearly true ascertainment of cost incurred by an organization in the course of production.

There have been several changes in Nigeria's construction industries. For instance, mechanical means of concrete mixing is now in vogue as against manual mixing. Secondly, the daily pay method of concrete mixing and block laying are gradually fizzling out as most clients now insist on counting the number of bags of cement mixed and number of blocks laid as means ascertaining costs of unskilled labour. The continuous usage of absorption (traditional) costing technique to allocate overhead costs

may be misleading. Thus, there is a need to ensure accuracy in ascertainment of construction project cost. More so, it is a common knowledge that accuracy in the costing of construction projects enhances profitability of the organizations involved. It will also enhance competitiveness in tendering which brings out the best.

In the construction industry, use of wrong costing techniques will definitely lead to poor evaluation of project performance, inaccurate project costing, difficulty in tendering procedures and subsequent award of construction contracts to unqualified bidding organization. This will be more challenging to a fixed price contract. In this case, the contractor will be forced to deliver the project at a loss; hence, paving way for limitations in cash flow, time and cost overruns, enforcement of ascertained liquidated damages. These detrimental challenges as a result of the use of wrong project costing techniques justifies this research work with a view to determining appropriate costing techniques that will ensure that the client gets value for money while the contractor maximizes his profit in an arrangement that is devoid of rancour, unnecessary arbitration and (maybe) litigation.

Given the above, the major aim of this paper is to demonstrate the impact of using different costing techniques on profitability construction companies through a case study on a company in the construction industry. The study provides answers to the following research questions:

1. To what extent does the use of traditional costing technique distort construction project cost?
2. To what extent does the use of activity-based costing technique remove distortions in construction project cost?
3. What costing technique allows proper allocation of costs in the construction industry?

Specifically, the study seeks to:

1. Determine whether the use of traditional costing technique distorts construction project cost.
2. Establish whether the use of activity-based costing technique remove distortions in construction project cost.
3. Identify costing technique that allows proper allocation of costs in the construction industry.

2. LITERATURE REVIEW

In this section, profitability and the two focal costing techniques (traditional and activity-based costing techniques) are discussed under conceptual framework, theoretical framework and empirical review.

2.1 Conceptual Review

2.1.1 Concept of Profitability

Profit is the positive difference between total revenue and total expenses. It usually appears on the income statement of companies. It is the essence of establishing a company. It is closely related to profitability which Horton (2019) defined as measurement of an organization's efficiency and ultimate success. He stated that

profitability is a relative metric used to determine a company's profit with respect to its size of business. According to him, once a company is able to produce return on investment based on available resources in comparison with an alternative investment, its profitability is ascertained. He is of the view profit making by a company does not translate to profitability. Oden (2021) stated that the concept provides management alternative course of action in relation to various degrees of profit margins captured in different projects. He traced the origin of the concept to the era of global industrial revolution. Encyclopedia.com (2021) defined concept of profitability as the ratio of profits to invested capital. She stated that the simple concept of profitability is key to a capitalist economy because it motivates entrepreneurs to embark upon productive venture that will if properly managed ensure expansion of investment. She also stated that to the economist, profitability is seen as Internal Rate of Return (IRR), Economic Rate of Return (ERR) or Accounting Rate of Profit (ARP) as the case may be. Acc ording to her, ERR comes in because of the limitation of short term horizon which IRR has; stating that profitability is very difficult to measure with actual data thus paving way for ARP.

2.1.2 Concept of Costing Techniques

Robinson (2019) defined cost as the amount of money paid to acquire factors of production in the execution of project. He stated that costs are the necessary expenditures that must be made in order to execute a project. He defined **c**osting as the classifying, recording and appropriate allocation of financial implications of performing a task or buying of goods. In the construction industry, cost determines the value of money to be expended for the successful completion of proposed project. On completion, value of the project is determined based on the project cost. Designing Buildings Ltd. (2018) stated that construction cost generally refers to the amount of money that has to (or will have to) be paid to receive goods and services; stressing that it may environmental cost, social cost, lifecycle cost, etc.; and that costing follows a sequential order of calculation and presentation so as to guide construction cost managers and other users accordingly.

Ahmad (2019) defined costing as the technique and process of ascertaining costs. He identified what he called important costing techniques to include absorption, direct, standard, historical, marginal and uniform costing techniques. Citing the Institute of Cost and Management Accountants (ICMA), he defined absorption costing technique as "the practice of charging all costs, both variable and fixed, to operations, processes or products." He stated that in absorption costing which is also known as full costing, there is no distinction between difference between fixed costs, variable costs and/or any other all costs.

Accounting Tools (2020) defined ABC as a methodology for more exact allocation overhead costs by assigning them to activities. She stated that once costs are assigned to activities, they can be costs can be assigned to the cost drivers for those activities. She also stated that ABC can be employed for the awaited or expected reduction of overhead costs. According to her, ABC is most suitable for complex environments and that is of minute use in a reorganised environment where production processes are abridged. She highlighted various steps by which ABC can walk through to include - *Identify*

costs Load secondary cost pools Load primary cost pools Measure activity drivers Allocate costs in secondary pools to primary pools Charge costs to cost objects Formulate reports Act on the information.

2.2 Theoretical Review

2.2.1 Theory of Profitability

1. **Unified Theory of Profitability:** This theory was propounded by Andrew Miller. Miller (2016) stated that unified theory of profitability is all about accelerating top line growth and maximizing profitability by not hiring more staff, reducing expenses or increasing selling prices of goods and services produced by a company: rather the organizations should effectively and efficiently utilize what they have instead of looking elsewhere. In other words, instead of employing new workforce, an organization should improve the performance of current employees. Instead of cutting down costs, spent money should be used for better investment. Instead of increasing prices, the company should identify ideal customers to sell their products to. It that to accelerate revenue growth and increase profitability immediately, there is no need for making any new financial investments. Organizations must look inward. In other words, look at the organization and find ways to better leverage what already exists and focus on the activities or changes that will provide optimal results.

2. **Profitability in Business Cycle Theory and Forecasting:** This theory as contained in Van Lear (1999) stipulates that given the important connections among profitability, investment, and economic activity, a profitability indicator can be used to assess where the economy is in the business cycle. Rising profitability suggests that the economy is on a secular growth path, while a peak or fall in profitability suggests that growth is slowing and the economy is headed for recession. One measure of profitability is to divide total business sector profit by total wages paid to labour. Let this variable be called the PW ratio.

3. **Marxian Profitability Theory of Exploitation.** This theory is contained in Flaschel, Franke &Veneziani (2011). It states that states that to attain profitable capital using laboursaving technical change is under mild conditions always reducing the labor content of commodities and increases Marx's value rate of profit in a systematic way. It further states that the relationship between the actual value and price rate of profit shows that the deviation between them may be of a secondary and unsystematic nature. It empirically argues that prices of production are in fact of a questionable nature and an unnecessary in the input-output oriented analysis of the profitability nexus between total labour costs and the actual prices of the considered commodities. It is of the view that the systematic changes in profitability can be represented by labour value magnitudes which are more informative than the corresponding price expressions, due to the – from the viewpoint of theory – 'chaotic' nature of interacting processes of commodity exchange in space and time, and with respect to contingencies.

2.2.2 Theory of Costing Techniques

Absorption costing also known as the full costing method is a costing system which treats all costs of production as a product cost regardless of whether they are variable or fixed costs. Absorption costing principles must be used when preparing financial statements for external purpose. Absorption costing is suitable for determining the price of the product as it ensures that all costs are covered, it shows correct profit calculation, conforms with matching and accrual concepts of accounting, and hence, recognized for the

"Traditional absorption costing is probably of limited value in a manufacturing environment where production process are highly automated, and production overhead costs is a much more significant element of cost than direct labour". Charaf and Bescos (2013) suggest that the current trend in modern accounting is that more and more companies are moving away from conventional costing systems (TC) and adopting ABC.

2.2.3 Analysis of Absorption Costing and Activity Based Costing Techniques

The major problem outlined in this study stems from the need to trace costs to products so as to accurately determine product costs which will lead to taking good management decision. Basically, two types of costs are involved. They are direct and indirect costs. Weetman (2003) stated that allocating direct costs to products is not difficult because specific identifications with the product line are possible through material issue records. Same cannot be said of indirect costs (overhead costs) because they some challenges are encountered when tracing them to cost objects.

Innes & Mitchell (1998) stated that constituents of indirect costs cannot be linked to individual products since they are shared by more than one product and it is impracticable to establish a monitoring technique. Absorption Costing and Activity Based Costing techniques treat direct costs similarly. However, Fang & Ng (2011) stated that in the former and based on the assumption that the products drive the costs directly, indirect overhead costs are absorbed into an overhead absorption rate or a series of overhead absorption rates. The main difference between an absorption costing technique and Activity Based Costing technique is the number of cost drivers used. ABC uses relatively more cost drivers in allocating overheads compared to absorption costing techniques where not more than two volume based cost drivers are used.

On similarity, absorption costing techniques and ABC techniques use a 2-stage costing techniques namely - apportionment of overheads to cost centres and assigning overheads to individual activities or products based on predetermined Overhead Absorption Rates (OAR).

Using same parameters and variables, for computation of Gross Profit Margin (GPM) of manufacturing two product models A and B, Solution Matrix Ltd (2021) found out that:

1. The GPM of the 2 product models A and B are 42.50% and 26.30% respectively using Traditional Costing Technique
2. The GPM of same 2 product models A and B are 26.10% and 36.80% respectively using Activity-Based Costing (ABC) Technique.

Similarly, while calculating the profitability of flower model, geometry model and cartoon model of an embroidery machine, Suteu, Mester, Bugnar, Andrescu&Petrica (2016) found out that:

1. The profit of the 3 models were ($123.51), $991.77 and $1,299.84 respectively using Traditional Costing Techn ique.
2. The profit of the 3 models were $2,419.92, $289.24 and ($1,741.07) respectively using Activity-Based Costing (ABC) Technique.

3. RESEARCH METHODOLOGY

The data used in the study was sourced from Bill of Quantities prepared by Airgof Konzorlt, Umuahia, Abia State for An Aba based Construction Company, Benarc Design Associates Ltd. The companies are deemed suitable by the researcher for the intended purpose. One of the reasons for choosing the companies is that they are currently handling a building development project for Eastern Nigerian Union Conference of the Seventh Day Adventist Church at Otikpiri Village Mgboko Umuarugh, Mgboko Amairi Autonomous Community, Obingwa LGA, Abia State, Nigeria. The profitability of the project is paramount to the companies involved while the client's interest in getting value for money is a major consideration. To achieve these, a technical study that determined optimal usage of the materials and workforce was carried out. Using different costing techniques for calculation of given data in the project, a different classification of products is obtained depending on profitability as demonstrated in the study. The selected methods viz. absorption costing techniques and activity based techniques are suitable for the projects.

The study extracted 3 different concrete mixes from the project. The 3 mixes are 1:2:4-19mm aggregate, 1:3:6-19mm aggregate and 1:4:8-19mm aggregate. From the organogram of the construction companies, 10 directly productive employees and 5 indirectly productive employees are involved. The overhead costs of the companies are drawn from salaries, premises, electricity, stationery, office equipment, computer software, computer equipment, office furniture, fittings and fixtures and are valued at ? 1,494,030.10 for the extracted part of the project used in the study. The synthetic method of costing for a command is:

$$= \sum_{-1}(\sum_{-1} h + \sum_{-1} h\hbar) \qquad (1)$$

Where:

Ct - total cost of the order
s - production facilities for running the order
Chd - direct expenses for facilities for an item of inventory
d - inventory items for direct expenses
Chi - overheads for facilities for an item of inventory
i - overheads

4. PRESENTATION OF RESULTS

This section deals with the presentation of the data obtained from the study and results. It also reveals the summary of the information obtained from the respondents to whom

questionnaires were administered. The data are presented in tables based on the research questions.

4.1 *Research Question One - To what extent does the use of traditional costing technique distort construction project cost?*

Table 1 – Profitability Calculation Using Traditional Costing Technique

S/N	Description	1:2:4-19mm Aggregate Concrete Mix	1:3:6-19mm Aggregate Concrete Mix	1:4:8-19mm Aggregate Concrete Mix	TOTAL
1.	Quantity - m3	442	394	6	
2.	Selling Price/Unit in Naira	44,076.61	35,682.48	31,162.58	
3.	Direct Material Cost/Unit	34,227.14	28,237.05	25,011.63	
4.	Direct Labour Cost/Unit	4,821.90	3,375.33	2,596.41	
	VAT Coefficient (mandatory)	0.075	0.075	0.075	
5.	Sales Revenue (1x2)	19,481,861.62	14,058,897.12	186,975.48	33,727,734.22
	Direct Costs				
6.	Direct Material Cost (1x3)	15,128,395.88	11,125,397.70	50,069.78	26,403,863.36
7.	Direct Labour Cost (1x4)	2,131,279.80	1,329,880.02	15,578.46	3,476,738.28
8.	Total Direct Cost (6+7)	17,259,675.68	12,455,277.72	65,648.24	29,880,601.64
9.	Overheads	862,983.79	622,763.89	8,282.42	1,494,030.10
10.	Revenue/Unit	44,076.61	35,682.48	31,162.58	110,921.67
11.	Direct Costs/Unit (8/1)	39,049.04	31,612.38	27,608.04	98,269.46

12.	Indirect Costs/Unit (9/1)	1,952.46	1,580.62	1,380.41	4,913.49
13.	Gross Profit/Unit (10-11-12)	3,075.11	2,489.48	2,174.13	7,738.72
	Gross Profit (1x13)	1,359,198.62	980,855.12	13,044.78	2,353,098.52
15	Gross Profit Margin	6.98%	6.98%	6.98%	

From Table 1 and with a total of ? 2,353,08.52, the gross profits for the 1:2:4, 1:3:6 and 1:4:8 – 19mm aggregate concrete mixes are ? 1,359,198.62, ? 980,855.12 and ? 13,044.78 respectively. Their various gross profit/unit are ? 3,075.11, ? 2,489.48 and ? 2,174.13 respectively. These translate to gross profit margin of 6.98% for the three mixes.

4.2 Research Question Two: To what extent does the use of activity -based costing technique remove distortions in construction project cost?

4.2.1 Profitability Calculation Using Activity-Based Costing Technique

Table 2 – Allocation of Activity Units, Activity Pools and Cost Drivers for Overheads

S/N	Overhead Cost Contributors (Activity Pools)	Cost Driver (CD) Activity Units	1:2:4-19mm Aggregate Concrete Mix (X)	1:3:6-19mm Aggregate Concrete Mix (Y)	1:4:8-19mm Aggregate Concrete Mix (Z)	TOTAL
1.	Water for works	litre	69,038.71	49,821.12	662.60	119,522.43
2.	Supervision	hour	112,187.90	80,959.31	1,076.72	194,223.93
3.	Documentation	hour	94,928.22	68,504.03	911.07	164,343.32
4.	Communication	hour	60,408.87	43,593.48	579.77	104,582.12
4.	Insurance	lumpsum	17,259.68	12,455.28	165.65	29,880.61
6.	Plant, tools and equipment	lumpsum	129,447.57	93,414.59	1,242.37	224,104.53
7.	Site accommodation	lumpsum	77,668.55	56,048.76	745.42	134,462.73
8.	Electricity	hour	51,779.03	37,365.84	496.95	89,641.82
9.	Transport for work people	no of people	43,149.19	31,138.20	414.13	74,701.52
10.	Access roads	lumpsum	60,408.87	43,593.48	579.77	104,582.12
11.	Scaffolding	lumpsum	73,353.63	52,934.94	704.01	126,992.58
12.	Testing	lumpsum	25,889.52	18,682.92	248.48	44,820.92
13.	Clearing on completion	lumpsum	43,149.19	31,138.20	414.13	74,701.52
	TOTAL		858,668.93	619,650.15	8,241.07	1,486,560.15

***	*Indirect Cost/Unit*	*1,942.69*	*1,572.72*	*1,373.52*

Table 3 – Allocation of Activity Pools to Product Units

Overhead Cost Contributors	Total Overhead Cost for X	Cost/Unit for X	Total Overhead Cost for Y	Cost/ Unit for Y	Total Overhead Cost for Z	Cost/Unit for Z	TOTAL DIRECT COST (X+Y+Z)
Water for works	69,038.71	156.20	49,821.12	126.45	662.60	110.44	119,522.43
Supervision	112,187.90	253.82	80,959.31	205.49	1,076.72	179.46	194,223.93
Documentation	94,928.22	214.77	68,504.03	173.87	911.07	151.85	164,343.32
Communication	60,408.87	136.68	43,593.48	110.65	579.77	96.63	104,582.12
Insurance	17,259.68	39.05	12,455.28	31.62	165.65	27.61	29,880.61
Plant, tools and equipment	129,447.57	292.87	93,414.59	237.10	1,242.37	207.07	224,104.53
Site accommodation	77,668.55	175.73	56,048.76	142.26	745.42	124.24	134,462.73
Electricity	51,779.03	117.15	37,365.84	94.84	496.95	82.83	89,641.82
Transport for work people	43,149.19	97.63	31,138.20	79.04	414.13	69.03	74,701.52
Access roads	60,408.87	136.68	43,593.48	110.65	579.77	96.63	104,582.12
Scaffolding	73,353.63	165.96	52,934.94	134.36	704.01	117.34	126,992.58
Testing	25,889.52	58.58	18,682.92	47.42	248.48	41.42	44,820.92
Clearing on completion	43,149.19	97.63	31,138.20	79.04	414.13	69.03	74,701.52
TOTAL	858,668.93		619,650.15		8,241.07		1,486,560.15

Table 4 – Gross Profit and Gross Margin Calculation for Each Products

S/N	Description	1:2:4-19mm Aggregate Concrete Mix (X)	1:3:6-19mm Aggregate Concrete Mix (Y)	1:4:8-19mm Aggregate Concrete Mix (Z)	TOTAL DIRECT COST (X+Y+Z)
1	Quantity Produced - m3	442	394	6	842
2	Total Direct Cost	17,259,675.68	12,455,277.72	165,648.24	29,880,601.64
3	Total Overhead Cost	858,668.93	619,650.15	8,241.07	1,486,560.15
4	Revenue/Unit	44,076.61	35,682.48	31,162.58	
5	Direct Cost/Unit	39,049.04	31,612.38	27,608.04	
6	Overhead Cost/Unit	1,942.69	1,572.72	1,373.52	
7	Gross Profit/Unit	3,084.88	2,497.38	2,181.02	
8	Gross Profit	1,363,516.96	983,967.72	13,086.12	2,360,570.80
9	Gross Profit Margin	7%	7%	7%	

From Tables 2, 3 and 4 and with a total of ? 2,360,570.80, the gross profits for the 1:2:4, 1:3:6 and 1:4:8 – 19mm aggregate concrete mixes are ? 1,363,516.96, ? 983,967.72 and ? 13,086.12 respectively. Their various gross profit/unit are ? 3,084.88, ? 2,497.38 and ? 2,181.02 respectively. These translate to gross profit margin of 7% for the three mixes.

4.3 Research Three – What costing technique allows proper allocation of costs in the construction industry?

Table 5 – Comparing Profitability Estimates of Traditional Costing Technique and Activity-Based Costing Technique

S/N	Gross Profit Margin	1:2:4-19mm Aggregate Concrete Mix (X)	1:3:6-19mm Aggregate Concrete Mix (Y)	1:4:8-19mm Aggregate Concrete Mix (Z)
1.	Traditional Costing Technique	6.98%	6.98%	6.98%
2.	Activity-Based Costing Technique	7%	7%	7%

From Table 5, the gross profit margin of traditional costing technique is 6.98% for each of the three concrete mixes while that of activity-based costing technique for the same mixes is 7%.

5. DISCUSSION OF FINDINGS

5.1 Research Question One – To what extent does the use of traditional costing technique distort construction project cost?

The findings in response to Research Question One show that for proper calculation of profitability, traditional costing technique requires only simple allocation rule and a total of overhead costs which is also known as preliminary costs. It does not distort the original cost in the Bill of Quantities (BOQ) as extracted for the study (see appendix). The technique ensures that overheads are located and direct expenses identified. However, it does not reveal the real costs until at the end of inventory period. It is very clear that there is no distortion of construction project.

5.2 Research Question Two – To what extent does the use of activity-based costing technique remove distortions in construction project cost?

The findings in response to Research Question Two show that for proper calculation of profitability, activity-based costing technique allows for the identification of the profit margin of each overhead activity. It is taken in the study that in this technique, activities consume allocated project resources. The technique recognizes that constituents of overhead costs can be distributed differently on unit basis. Like traditional costing technique, it does not distort the original cost in the Bill of Quantities (BOQ) as extracted for the study (see appendix).

5.3 Research Question Three – What costing technique allows proper allocation of costs in the construction industry?

From the study, activity-based costing technique allows for proper allocation on costs in the construction industry. However, it does not significantly make more impact than the traditional costing technique in terms of profitability. This is because the profit margins are 7% and 6.98% respectively. The difference of 0.02% is minute.

6. CONCLUSION

From the study, activity-based costing technique appears better. It ensures identification of activity pools and cost drivers for major activities. It has evolved to increase supplementary activities by recognizing a lot of cost determining factors. Thus, giving construction companies more insight in the true cost of projects. This does not mean that the traditional costing technique is not relevant in the construction industry. It can be used to find the total production costs for construction projects and still churn out reliable result. It can still be used to allocate overhead costs. The study finds out the result of applying traditional costing technique in the construction industry is still satisfactory despite varying views as captured in the literature review of the study. Although activity-based costing technique produces accurate project costs it is still complementary to the traditional costing technique.

7. RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made:

1. Activity-based costing technique and traditional costing technique should be used as complements. The former is very relevant in internal financial reporting for decision making while the latter can be primarily used to provide information to external users of the construction company's data.

2. Activity-based technique should be used for tendering purpose so that bidding construction companies can incorporate overhead costs in clearer terms. No doubt, this will enhance cost analysis and activity scheduling (programme of works) of construction projects.

REFERENCES

AccountingTool (2020). Activity-based costing definition. Retrieved from https://www.accountingtools.com/articles/2017/5/14/activity-based-costing

Ahmad, A. (2019). *Costing methods and techniques.* Retrieved from https://www.playaccounting.com/exp-ca/ca-exp/costing-methods-and-techniques/

Alsoboa, S., Al-Ghazza, A. & Joudeh, A. (2015). The Impact of Strategic Costing Techniques on the Performance of Jordanian Listed Manufacturing Companies. *Research Journal of Finance and Accounting, Vol.6 (10)*

Ayeni, J. O. (1986). *Principles of tendering and estimating.* Lagos: NIQS Press

Bragg, S. (2020). *Costing definition.* Retrieved from https://www.accountingtools.com/articles/what-is-costing.html

Charaf, K. and Bescos, P.L. (2013). "The role of organisational and cultural factors in the adoption of activity-based costing: The case of Moroccan firms". *Accounting and Management Information Systems*. 12(1):4–12.

Encyclopedia.com (2021). *Profitability.* Retrieved from https://www.encyclopedia.com/social-sciences/applied-and-social-sciences-magazines/profitability

Fang, Y. and Ng. S.T. (2011). "Applying activity-based costing approach for construction logistics cost analysis". *Construction Innovation.* 11(3): 259–281.

Flaschel, P., Franke, N. and Veneziani, R. (2011). The sources of profitability. Retrieved from https://www.researchgate.net/publication/228456736_The_sources_of_profitability

Horton, M. (2019). *The difference between profitability and profit.* Retrieved from https://www.investopedia.com/ask/answers/012715/what-difference-between-profitability-and-profit.asp

Innes, J. and Mitchell, F. (1998). *A practical guide to activity based costing.* London:Kogan Page Ltd.

Kenton, W. (2020). *Activity-Based Costing (ABC).* Retrieved from https://www.investopedia.com/terms/a/abc.asp

Lysons, B. & Farrington, B. (2006). *Costing techniques.* Retrieved from https://www.kbmanage.com/concept/costing-techniques

Nikhila, C. (2021). *Costing: Meaning, Aims and Methods.* Retrieved from https://www.businessmanagementideas.com/cost-accounting/costing-meaning-aims-and-methods-cost-accounting/7265

Robinson, A, I. (2019). *Construction cost management.* Umuahia: Airgof Konzorlt.

Oden, C. (2021). *The concept of profitability factors as a guide to policy decision.* Retrieved from https://www.projecttopics.org/concept-profitability-factors-guide-policy-decision.html

Solution Matrix Ltd (2021). *Activity-Based Costing, ABC management: how to apply traditional and activity-based costing, steps, results compared.* Retrieved from https://www.business-case-analysis.com/activity-based-costing.html

?uteu, M. D., Mester, L. E., Bugnar, N. G., ANDREESCU, N. A., Petrica, D. M. (2016).*_The impact of costing methods onprofitability of enterprises operating in the embroidery industry._ Retrieved from https://www.scribd.com/document/422400609/The-Impact-of-Costing-Methods-on-Profitability-of-Enterprises-Operating-in-the-Embroidery-Industry-254920-221168

Tuovila, A. (2020). *Absorption costing.* Retrieved from https://www.investopedia.com/terms/a/absorptioncosting.asp

Van Lear, W. (1999). *Profitability in business cycle theory and forecasting.* Retrieved from https://www.sciencedirect.com/science/article/abs/pii/S0486613499800035

Weetman, P. (2003). *Management accounting: an introduction.* 3rd edition. London: Pearson Education Limited.