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Research article

Conventional Absorption Costing Information Model and Operational Decision Making: An Empirical Critique.

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ABSTRACT

The need to lend a voice to the ongoing debate (which has remained inconclusive) as to the decision usefulness of the absorption costing information model in support of operational decision making informed this current study. The study obtained data from management accountants and operation managers of 82 firms listed on the floor of the Nigerian Stock Exchange (NSE) as to determine at first hand the decision usefulness of the absorption costing information model. From the review of the literature and the analysis of the field data, it was observed that the absorption costing information model has not lost its place in generating decision useful information in support of operational decision making. It was observed that operational decisions that completely ignore the absorption costing information as being too aggregated must realize that ultimately all expenses must be accounted for to determine a firm's profit. Furthermore, the outcomes of operational decisions must ultimately navigate to the overall system's profit which cannot be compromised pure for short term decision exigencies. Hence, capturing the complete costs of operating a system in every decision making scenario would lead to optimal decision making, as opposed to capturing only a partial costs of the system. All that is required is to glean the information to obtain that which is relevant for the specific decision making scenario.

Key words: Absorption costing, Product/Process costing, Operational decision making, Accounting information.

Conceptual Overview

One of the earliest derivatives of the Accounting Information System's contribution towards addressing the challenges of accurate product/process costing and therefore price determination was the full absorption costing

model. Its evolution was a major plus to the very essence of the Accounting Information Science. But with the passage of time, growth in knowledge and technology, coupled with the stochastic nature of the modern day business processes and environments (with the resultant hike in levels of competition and risk) which requires ingenuity on the part of corporate managers, curious minds were soon to discover certain inherent weaknesses with the full absorption costing model.

The full absorption costing model was criticized on the grounds of aggregation, timeliness and relevance to managerial decision making (Johnson and Kaplan, 1987; Goldratt, 1983; DeMarco, 2001). Furthermore, it was criticized as a model that encourages the accumulation of unwanted inventories, the turning away of business because it appears to be apparently unprofitable and leads management to inappropriate decisions (Horngren, Foster, and Datar, 2000; Gaither and Fraizier, 2002; Kaplan and Atkinson, 1998). It encourages (Goldratt, 1990) individual product profitability and local optima as opposed to the system's profitability.

The criticisms led to paradigm shifts in models of accounting information generation and reporting for managerial decision making. As commendable as the alternative models would appear to be, as espoused by their various protagonists, can it be empirically averred that the full absorption costing information paradigm has become outdated and thus irrelevant for decision support? Has it outlived its usefulness and therefore become obsolete, so lost its place in the decision usefulness function within the ambit of the accounting information science? Has its place being taken over by other innovative costing models? Providing empirical answers to these queries forms the nexus of this study.

Literature Review

Absorption or full costing is a traditional method of costing where all manufacturing costs are capitalized in the inventory. This means that these costs do not become expensed until the inventory is sold. All selling and administrative costs are debited to the profit and loss account as expenses (Braide, 2000; Horgren, Foster and Datar 2000). Historically, Cost Accountants have had an easy task of assigning direct material and labour costs to product cost. However, to have a complete picture of product costs, a fair share of indirect costs must be applied. The literature recognizes this as factory overhead or burden. The traditional method of applying factory overhead to products is commonly referred to as absorption costing. Though, absorption costing captures minimal space in current literature in journals, technically, full absorption costing is required for external reporting as satisfying GAAP requirements. However, Cooper and Kaplan (1988) observed that most senior managers are convinced that their full-cost systems were inadequate for making product related decisions.

Despite these misgivings by most senior managers (Cooper and Kaplan, 1988), many firms continue to use the absorption costing approach internally, simply because of senior management fears that profit center managers will indiscriminately substitute variable costing (contribution margin) approach for absorption costing, leading to devastating price cuts and net prices that fail to completely cover the fixed costs and target profit in pricing decisions. However, the literature suggests that there are alternatives to the traditional practice of basing absorption rates on direct labour hours. Several additional alternatives exist that would facilitate better product costing (Hilton, 1999).

Noreen and Burgstahler (1997) in their investigation of multi-product manufacturing operations using fixed costs and full-cost markup rules (absorption costing) observed that a significant majority of firms use the full-costing methodology in determining product price. On his part, Lucas (1997) acknowledged limitations with the traditional absorption costing approach but asserts that the contribution margin model has some shortcomings as well. The contribution margin approach is based on Cooper and Kaplan's ABC in which they described five cost levels: (a) unit-level, (b) batch-level, (c) product-sustaining, (d) customer-relative, and (e) general overhead costs. Lucas (1997) found that the contribution margin approach works well for the lower three levels because they are product related. The upper two levels are not product and volume related and may be more appropriately handled using absorption costing. Furthermore, Curry (1997) argued that a properly handled absorption costing system could satisfy decision-making information needs, as well as, contributes to management systems. To obtain accurate product costs within the system, the allocation base should be the cost driver. Absorption costing system is not limited to direct labour or machine hours in determining overhead allocation rates (Curry, 1997; Braide, 2000).

Criticisms of Full Absorption Costing

The Absorption Costing Information Model has been castigated severely for generating irrelevant and mischievous information. The literature is agog with several critics of this costing model. As argued by Goetz way back in 1949, these systems of simple proportional divisions, followed by allocations and reallocations do not provide data appropriate for managerial use in planning or controlling operations. Moreover, they tend to put such data as do exist in an inaccessible form, unless other purposes for such data exist, the system should be discontinued to save the clerical costs of operating it (Goetz, 1949). Furthermore, Kaplan and Atkinson (1998) observed that traditional absorption costing presents management with a false picture of true product costs, actually encouraging the growth of inventory levels and may lead management to inappropriate decision. Overall profitability of the firms could only be improved at the system's level; any attempts at local optima may have undesired consequences for the firm (Goldratt, 1983, 1990a and 1990b).

Furthermore, Noreen and Burgstahler (1997) concluded in their study that despite the fact that a significant majority of firms use absorption costing, this methodology leads to incorrect relationships between individual product costs because absorption costing does not necessarily apply overhead allocations in the proportion as the drivers of those overhead costs. The resulting inaccuracies in fully loaded product costs, lead to tactical decisions that sub-optimize profitability of the firm. Thus, Noreen and Burgstahler (1997) concluded that higher profits were possible if alternative costing methodologies had been used in tactical decision-making.

Given this array of criticisms, has the absorption costing information model lost its place and relevance in the accounting information generation framework? Support for the current study is found in the submissions of Zimmerman (1997) and Braide, (2000) who opined that despite these streams of criticisms, absorption costing system is the predominant systems in use in manufacturing firms today. Probably, GAAP's acceptance of the methodology for external reporting could be the reason. This is why this study is geared towards determining if truly the absorption costing information model has lost its place in generating decision useful accounting information in support of tactical decision making.

Hypotheses Development

Noreen and Burgstahler (1997) observed that the short-coming associated with absorption costing leads to tactical decisions resulting in sub-optimal profitability of the firm. In addition (Johnson and Kaplan, 1987; Goldratt, 1990; Kaplan and Atkinson, 1998; and DeMarco, 2001) deposition that the aggregation, timeliness and relevance of absorption costing information leads to wrong operational decisions and building up of unwanted inventory. Furthermore, given the measurability of the outcomes of operational decision making (Boyd, 1997, 1999 and Whittenberg, 2004) by way of work in progress inventory values, finished goods inventory values, cycle time, number of jobs or orders on the factory flows, it is possible to determine empirically the relevance or otherwise of the absorption costing information model's support for managerial decision-making at the operational level. The under listed hypotheses were predicted on the above submission:

H₁: Tactical decisions made with absorption costing information input significantly distorts the values of work-in-progress inventories.

H₂: Finished goods inventory values are significantly distorted by tactical decisions made on the basis of absorption costing information

H₃: The reliance on absorption costing information in making tactical decision leads significantly to unreliable cycle time measurement.

H₄: Reliance on absorption costing information in tactical decision-making leads to unreliability in the evaluation and determination of number of orders in the shop.

Methodology

Data for the current study was obtained from management accountants and operational managers randomly selected from 82 firms listed on the floor of the Nigerian Stock Exchange, and analyzed based on the positivist's research paradigm. Hence, the ontological assumption of realism, epistemological assumption of positivism, and the deterministic assumption of human nature informed the choice of the methodology in the current study, which required the use of inferential statistical tools for hypotheses testing to arrive at the findings and conclusions of the study.

Results, Conclusion and Implications

Table 1: t-test Results for Hypotheses

Hypothese	t _{cal}	t _{crit}	Df	P<.05	Remarks
H ₁	59.24	1.96	247.97	P<.05	Reject H ₀₁
H ₂	23.14	1.96	240.47	P<.05	Reject H ₀₂
H ₃	49.22	1.96	160.86	P<.05	Reject H ₀₃
H ₄	3.68	1.96	249.33	P<.05	Reject H ₀₄

From the t-test statistical results detailed in table 1, all four hypotheses did pan out. This means that the information content derived from the traditional absorption costing model is relevant for tactical decision support. Furthermore, the results from the effect size (r) and estimated omega squared (\hat{W}^2) anchored in table 2

were empirically conclusive, as they were statistically significant in varying degrees. The only discriminating result was anchored in H₄ which showed a very weak relation.

Table 2: Effect Size (r) and Estimated mega squared Value of the t statistic

t-statistic	Effect Size		Estimated Omega Squared	
	r	Remark	W ²	Remark
59.24	.97	Very Strong	.93	Very Strong Association
23.14	.83	Very Strong	.68	Strong Association
49.22	.97	Very Strong	.91	Very Strong Association
3.68	.23	Weak	.05	Very Weak Association

From the empirical inferential statistical evidence, it is obvious that despite the criticism leveled against the absorption costing model, its capacity to generate information to support managerial decision making at the operational level cannot be overlooked. Fortunately, the absorption costing model is the only acceptable means for external financial reporting which satisfies both legal and GAAP requirements.

In his contribution to the place of absorption costing, Lucas (1997) had acknowledged that like every other model, there are limitations in the absorption costing model, but asserts that these limitations do not invalidate the tactical decision usefulness of the model. Hence, his submission that the contribution margin approach works well for the lower three levels of the five-cost levels defined by (Cooper and Kaplan's 1988) ABC, because they are product related (Lucas, 1997), while the upper two levels are not product and volume related and are therefore, better handled using absorption costing. From the result of this current study, it is obvious that information generated from the absorption costing paradigm is not irrelevant for management decision support. This inference finds a common thread also in the submission of Curry (1997), who observed that a properly handled absorption costing system can satisfy the information needs of decision-makers, as well as contribute optimally to aid management.

To obtain accurate product costs within the system, the overhead allocation basis should be the cost driver. This is because the treatment, and or, recovery of overhead costs under.

The absorption cost paradigm is not limited to only direct labour or machine hours. There are many reasons why firms opt to use absorption costing rather than the newer models. In the long-run, revenues must cover all costs and target profits to stay in business. In the same vein fixed costs take on variable or step wise component behaviour over time. Also there are concerns by senior management that profit center managers (Cooper and Kaplan, 1988; Whittenberg, 2004) will indiscriminately substitute variable costing for absorption costing, leading to devastating price cuts and net prices that fail to completely cover the fixed costs and target profit in pricing decision. The implication is that managers at the tactical level cannot ignore the decision usefulness of the information content of absorption costing. All that is required of tactical decision-makers is to glean the

information content of absorption costing to discriminate what is required for tactical decision-support. Hence, Horngren, Sundem and Stratton (1996) noted that absorption based pricing tends to promote price stability and provides the most defensible basis for justifying prices to all interest parties, including tax authorities and antitrust investigators.

Against this background, the absorption costing information model, despite some inherent limitations has the capacity for generating decision usefulness information in support of operational or tactical decision-making. The growth in ICT and its accompanying soft-wares, which has eliminated the bulk of clerical work (Goezi, 1949) provides a proper framework for the application of the absorption costing model thus enhancing its decision usefulness. Thus, the absorption costing model would continue to provide relevant information support for management decision making at all levels. Indulging innovations in ICT models and there accompanying capacity and speed in capturing and processing data, as well as, generating and disseminating information has eliminated the delay associated with the bulk of the clerical component of the absorption costing information model. This means faster processing and delivery time for any costing information. Hence, capturing the complete costs of operating a system in every decision making scenario would lead to optimal decision making, as opposed to capturing only a partial costs of the system.

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