



ACCOUNTING INFORMATION SYSTEM AND PERFORMANCE: A CASE STUDY OF NIGERIA MANUFACTURING INDUSTRIES

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Abstract

This study evaluate the effectiveness of accounting information system in enhancing manufacturing firms and thus, the research emphasized to establish the level of significant of AIS on the effectiveness of manufacturing industries. Basically, contingency theory was adopted to explain the line of relationship between the variables. A questionnaire survey was used to collect the data and a total of 80 manufacturing firms were randomly selected from the study area. Regression and correlation model were used to analyse this research work. The results were estimated on the level of AIS significant to the performance of manufacturing firms. The Adj. R- squared: 0.123 (profitability), 0.215 (effectiveness), 0.321 (Decision making), 0.4321 (growth), 0.511(accessibility to loan), 0.623 (capital expansion) at level of 95% confidence interval. AIS have strong influence on capital expansion, accessibility to loan, growth of the organisation and decision making than profitability and effectiveness of the manufacturing firms. Sequel to the findings and conclusion of this research, the following recommendations were made to manufacturing companies: Starting from the commencement of business, AIS should be incorporated to Finance and Account Department (FAD). Invest more on AIS in order to increase the level of operations and have more effect on their performance and subsequent training on AIS should be made available to concern staff.

Keywords: Accounting Information System, Manufacturing Firms, Information Technology.

Introduction

Before the advent of information technology, information was been processed traditionally which was full of human error, fraudulent activities, longer processing period, costlier and time consuming but with the invention of AIS all the problems associated with manual or traditional method of processing information had been resolved. Thus, an Accounting Information System (AIS) has become one of the used technologies that have empowered the accounting department immeasurably in gathering of accounting information, timely processing of the information which is void of human error and preparation of financial statement to its users, this aids firm capabilities in terms of decision making and performance improvement. AIS is generally defined as a computer-based method for tracking accounting activity in conjunction with information technology resources (Wikipedia, 2015). According to Daw and Susan (2015) AIS is the whole of the related components that are put together to collect information, raw data or ordinary data and transform them into financial data for the purpose of reporting them to decision makers. Thus, for better understand of the term 'Accounting Information System', the three words constitute AIS was elaborated by Wilkinson, 1993 and Watts, 1999, firstly, literature documented that accounting could be identified into three components, namely information system, "language of business" and source of financial information. Secondly, information is a valuable data processing that provides a basis for making decisions, taking action and fulfilling legal obligation. Finally, system is an integrated entity, where the framework is focused on a set of objectives.

AIS is important for all firm irrespective of whether Small , Medium or large whether manufacturing or Service rendering organisation it is even more important for service rendering organisation due to the arising need for information dynamic and competitive environment and it will also be a leverage for achieving a stronger, more dynamic corporate culture to face ever-changing environment. Gul, (1991) concluded that AIS combines the methodologies, controls and accounting techniques with the technology of the IT industry to track transactions, provide internal reporting data, external reporting data, financial statements, and trend analysis capabilities to affect an organizational performance. According to Mudashiru et al., (2013), effectiveness of Accounting Information System depends on the perception of decision makers on the usefulness of information generated by the system to satisfy informational needs for operation processes, managerial reports, budgeting and control within the organisation. It also reveals that in achieving an effective performance of an organization and implementing an internal control system the impact of accounting information system (AIS) cannot be over-



emphasized. An important question in the field of accounting and management decision-making concerns the fit of AIS with organizational requirements for information communication and control (Nicolaou, 2000). Accounting Information Systems will be useful when information provided by them is used effectively in decision making process by the users. Accounting information systems are said to be effective when the information provided by them serves widely the requirements of the system users.

To posh(2014) asserted that other qualitative characteristics of accounting information can also be maintained if there is sound internal control system in an organization, effective systems should systematically provide information which has a potential effective on decision making process (Ivestet.al, 1983).Kim (1989) argues that usage of AIS depends on the perception of the quality of information by the users.Generally, the quality of information depends on the reliability, form of reporting, timeliness and relevance to the decisions. Bolon, (1998) views that benefits of accounting information system can be evaluated by its impacts on improvement of decision-making process, quality of accounting information, performance evaluation, internal controls and facilitating company's transactions Manufacturing industries are important for economic development of both developed and developing countries, its play a major role in employment generation, income distribution and a source of economic propeller through the production and export contribution. Glancing through the important of manufacturing industry, Kayode (1989) asserted that industry; in particular the manufacturing sub-sector is the heart of nations' economy. Libanio (2006), studied the relationship between manufacturing output growth and economic performance, its conclusions states that there is close relationship between the growth of the manufacturing output and the growth of gross domestic product (GDP) and also the manufacturing sector has an important role in the growth performance of the economy, that is, it is characterized by the existence of increasing returns to scale.

In line with Sangosanya, (2011), manufacturing firms are considered vital to economic growth and are increasingly important laboratories for scholars interested in researching where a variety of market frictions-information, asymmetry, moral hazard, liquidity constraint, integration and market diversification, for example are most amplified. Consequently, manufacturing industry is investing so much in information system in other to be relevant and in sustaining competitive environment. Moreover, some of these manufacturing invest high in information system, some low while many did not even border to invest in it. Those that have adopted AIS could not measure its effect on their performance. Accounting systems are often the most important formal sources of information in industrial organizations. They are designed to provide all levels of management with timely and reasonably accurate information to effect on performance management and help them make decisions which are in agreement with their organization's goals (Anthony G, 2006).

Objective to the study

Thus, this study examine the effectiveness of Accounting Information System on the performance of manufacturing and its role in enhancing manufacturing firms' effectiveness, decision-making , growth, capital expansion, accessibility to loan and profitability in Nigeria. Other objectives is to measure the relationship between accounting information system and manufacturing industries

Research Hypotheses

The following hypotheses are stated in null form;

1. There is no significant relationship between accounting information system and manufacturing companies' effectiveness.
2. There is no significant relationship between accounting information system and manufacturing companies' decision-making.
3. There is no significant relationship between accounting information system and manufacturing companies' growth.
4. There is no significant relationship between accounting information system and manufacturing companies' capital expansion.
5. There is no significant relationship between accounting information system and manufacturing companies' accessibility to loan.



6. There is no significant relationship between accounting information system and manufacturing companies' profitability.

Literature Review

This study adopted the contingency theory that was used by Samuel, (2011) to show the impact of accounting information system on organizational effectiveness of automobile companies in Kenya. Contingency theory suggests that an accounting information system should be designed in a flexible manner so as to consider the environment and organizational structure confronting an organization. Accounting information systems also need to be adapting to the specific decisions being considered. In other words, accounting information systems need to be designed within an adaptive framework. Early research that focuses on the contingency view of accounting information systems was "A Contingency Framework for the Design of Accounting Information Systems" (Gordon & Miller, 1976). This study laid out the basic framework for considering accounting information systems from a contingency perspective. Gordon & Narayanan (1984) opined that environmental uncertainty is a fundamental driver for designing management accounting systems among successful organizations. It was also reported that, as decision makers perceive greater environmental uncertainty, they tend to seek more external, nonfinancial and ex ante information in addition to internal, financial and ex post information. Moreso, contingency theory has been given relatively little consideration in terms of the factors that influence the accounting information systems. Empirically, this research provides answer to these cogent questions 'what are the reasons for adoption of accounting information system in manufacturing companies?' and, what are the effects of accounting information system adoption on manufacturing companies' effectiveness, efficiency, growth, capital expansion, accessibility to loan and profitability based on evidence of management accounting information contingencies of the selected manufacturing companies in Nigeria.

Chenhall and Morris (1986) described AIS according to the perceived usefulness of four information attributes, namely scope, timeliness, level of aggregation, and integration. Scope refers to the measures being used and to the extension of AIS in time and space. Then information could focus on future vs. historical events or external vs. internal events. Also the information could be quantified in monetary or non-monetary terms. Timeliness refers to the frequency, speed of reporting and the orientation of the information (e.g. short or long run). Aggregation refers to the way data is aggregated in time periods, functions or in accordance with decision models. Finally, integration refers to the need of providing information to reflect the interaction and coordination effects of several functions in the organization. These four attributes have been analysed for comparing AIS and organizational strategies and performance (Gordon & Miller, 1976). Only recently have studies begun to examine whether organizations systematically vary the AIS design to support their chosen strategy, recognizing that AIS have the potential to facilitate strategy management and enhance organizational performance (Gordon & Miller, 1976). Accounting Information System plays a proactive role in the strategy management, acting as a mechanism that enables organizational strategy (Chenhall, 2003). Strategy has been examined using different typologies, such as Porter (1985) or Miles and Snow (1978). The latter has been extensively used in management literature (Ponemon & Nagoda, 1990). In the present study it is assumed that the organizational performance is a function of the financial performance, performance management and the AIS. Fitness will exist in the combination of strategy and AIS that contribute to financial performance.

Hunton (2002) concluded in his study on the relationship between automated accounting information system and organizational effectiveness; that there was strong relationship between accounting information system and organizational effectiveness, which means access to accounting information will lead to organizational effectiveness. Several recent studies on value of accounting information for equity valuation, share price and earnings prediction have queried current financial reporting model in the developed world. The same issue can be raised in Kenya about the value relevance of accounting numbers to investors. This assists the researcher to determine whether the result agrees or digresses from the previous studies.



Methodology

A total number of 80 manufacturing firms were randomly selected from the study area. This manufacturing firm comprises of manufacturing of kitchen utensils, foam, bottled water, shoes, soap & detergent, security equipment and sacks & bags.

Primary data through a structured questionnaire was administered to the manager of each selected manufacturing company to source for the questions related to the research objectives. Regression and correlation model were used to analyse the research hypotheses.

Reliability of the Measurement

Cronbach’s Alpha was used to test the reliability of performance indicators which achieved (0.933) and considered.

Table 1: Cronbach's Alpha reliability test for all performance indicator

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Perf_Indicator 1	18.7083	15.590	.464	.937
Perf_Indicator 2	18.9028	14.145	.792	.925
Perf_Indicator 3	18.8750	14.055	.776	.926
Perf_Indicator 4	18.8750	14.224	.729	.928
Perf_Indicator 5	18.7083	15.505	.450	.938
Perf_Indicator 6	18.7083	14.519	.803	.925
Perf_Indicator 7	18.6111	15.593	.578	.933
Perf_Indicator 8	18.6389	15.248	.655	.931
Perf_Indicator 9	18.6389	15.389	.605	.932
Perf_Indicator 10	18.7500	14.190	.864	.923
Perf_Indicator 11	18.7639	14.098	.880	.922
Perf_Indicator 12	18.8611	13.727	.931	.919
Cronbach's Alpha Based on Standardized Items = .933				

Source: SPSS output based on authors imputation

Results and Discussion

Awareness and Level of AIS Adoption

The result on table 2 shows whether the manufacturing company sampled were aware of the Accounting Information System, all of the respondents 72(100%) are of the opinion that their company were aware of the AIS in processing their information for the end users. Meanwhile, it is of important to revealed the level of adoption of AIS, and from table 1 it can be deduced that 43(59.7%) of the respondents are of the opinion that the level of adoption is very high, 22(30.6%) agreed that the adoption level is high while only 9.7% opined that the adoption level in their company is low. Averagely, it can be asserts that the level of AIS adoption is high in all the manufacturing company sampled.

Table 2: Responses on company AIS awareness

Awareness of AIS	Frequency	Percentage
Yes	72	100.0
No	0	0
Total	72	100.0
Adoption level	Frequency	Percentage
Very High	43	59.7
High	22	30.6
Low	7	9.7
Total	72	100.0

Source: Field Survey, 2015



AIS and Company's Performance

Table 3 below revealed the role that the adoption of AIS plays in enhancing manufacturing companies performance, 75% of the respondents agreed that AIS adoption has led to their company's effectiveness in provision of information to the end users while 25% were also strongly agreed about this fact. Furthermore, Information from AIS allows proper planning as agreed by approximately 56% of the respondents. The result also revealed that 55.6% of the respondents agreed, 43.1% were strongly agreed while only 1.4% were undecided about the fact that AIS adoption allows strategic means of operation. 73.2% of the respondents agreed that AIS adoption improve their company's level of decision-making and 77% also agreed that AIS adoption aid in the free flow of information between the management. Moreso, AIS adoption has led to their company' growth and expansion has opined by 84.7% of the respondents. 81.9% of the respondents agreed while 18.1% were strongly agreed that AIS adoption improve your company's accessibility to loan. Furthermore, 79.9% of the respondents opined that AIS adoption improves their company's capital expansion while 21.1% also buttress this fact. It was also revealed that AIS adoption contribute to the stability of manufacturing company by 70.8% of the respondent while 69.4% of the respondents also agreed that Adoption of AIS allow their company to monitor the inflow and outflow of fund and lastly, 59.7% of the respondents agreed while 40.3% were also strongly agreed that adoption of AIS allow proper transparency in their company.

Table 5: Respondents' Responses Based On AIS And Company's Performance

S/N	Indicator	SA(%)	A(%)	U(%)	S(%)	SD(%)
1	AIS adoption has lead to your company's effectiveness in provision of information to the end users	25.0	75.0	-	-	-
2	Information from AIS allows proper planning	44.4	55.6	-	-	-
3	AIS adoption allows strategic means of operation	43.1	55.6	1.4	-	-
4	AIS adoption reduce uncertainty in planning	44.4	55.6	-	-	-
5	AIS adoption improve your company's level of decision-making	73.2	27.8	-	-	-
6	AIS adoption aid in the free flow of information between the manager	23.0	77.0	-	-	-
7	AIS adoption has lead to your company' growth and expansion	15.3	84.7	-	-	-
8	AIS adoption improve your company's accessibility to loan	18.1	81.9	-	-	-
9	AIS adoption improves your company's capital expansion	21.1	79.9	-	-	-
10	AIS adoption contribute to the stability of your company	29.2	70.8	-	-	-
11	Adoption of AIS allow your company to monitor the inflow and outflow of fund	30.6	69.4	-	-	-
12	Adoption of AIS allow proper transparency	40.3	59.7	-	-	-

Source: Field survey, 2015.

Test of Hypotheses

There Is No Significant Relationship between Accounting Information System and Manufacturing Companies' Effectiveness

Table 6 revealed that 79.7% of the total variation in the dependent variable (AIS adoption) is being explained by the independent variable (Q1, Q2, Q3, and Q4), the adjusted R² also shows that the regression model obtained can be used to predict the rate at which AIS adoption enhances manufacturing company effectiveness. Likewise, table 7, revealed that all the independent variable tested (Q1, Q2, Q3, and Q4) have P-value of .028, .000, .010 and .000 respectively and the result is significant at 5% level with $F(4, 71) = 5.853$, hence, we reject the null hypothesis and asserts that there is significant relationship between Accounting Information System and manufacturing companies' effectiveness. This is in line with the work of Onaolapo and Odetayo (2012), which concluded that accounting information system has effect on organizational effectiveness. Likewise, Hunton, (2002) study, which investigated the relationship between automated accounting information system and organizational effectiveness;



showed that there was strong relationship between accounting information system and organizational effectiveness, which means access to accounting information will lead to organizational effectiveness.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.893 ^a	.797	.215	.10444

a. Predictors: (Constant), Q1, Q2, Q3 and Q4

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.000	.055		18.028	.000
Q1	.038	.039	.142	.986	.028
Q2	.269	.068	1.143	-3.964	.000
Q3	.345	.039	.000	.000	.010
Q4	.231	.054	1.026	4.259	.000

a. Dependent Variable: AIS Adoption
 For Q1-Q4 see table 5
 Source: SPSS output based on authors imputation

There Is No Significant Relationship between Accounting Information System and Manufacturing Companies' Decision-Making

The findings on table 8 shows that 59.9% of the total variation in the dependent variable (AIS adoption) is being explained by the independent variable (Q5 and Q6), the adjusted R² also shows that the regression model obtained can be used to predict the rate at which AIS adoption enhances manufacturing company decision making. More so, table 10, revealed that both the independent variable tested (Q5 and Q6) have P-value of .028, .023 and .046 respectively and the result is significant at 5% level with F(2,71)= .2216, hence, we reject the null hypothesis and asserts that there is significant relationship between Accounting Information System and manufacturing companies' decision making. This substantiate the work of Alzoubi(2011) which concluded that the integration of accounting information system within the ERP system improving the quality of accounting outputs and the internal control in companies and Adebayo et al., (2013) which asserts that accounting information system is an indispensable tool in decision making in today's turbulent world.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.774 ^a	.599	.321	.11588

a. Predictors: (Constant), Q5 and Q6

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	.060	2	.030	2.216	.011 ^b
Residual	.927	69	.013		
Total	.986	71			

a. Dependent Variable: AIS adoption



Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	.255	4	.064	5.853	.000 ^b
1 Residual	.731	67	.011		
Total	.986	71			

a. Dependent Variable: adopt AIS adoption
 b. Predictors: (Constant), Q1 – Q4
 b. Predictors: (Constant), Q5 and Q6

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.069	.067		15.875	.000
Q5	.036	.031	.142	1.153	.023
Q6	.067	.033	-.250	-2.033	.046

a. Dependent Variable: AIS adoption
 For Q5 and Q6, see table 5
 Source: SPSS output based on authors imputation

There Is No Significant Relationship between Accounting Information System and Manufacturing Companies' Growth

The study further revealed (table 11) that 80.6% of the total variation in the dependent variable (AIS adoption) is being explained by the independent variable (Q7), the adjusted R² also shows that the regression model obtained can be used to predict the rate at which AIS adoption enhances manufacturing company growth. It was also revealed in table 13, that the independent variable tested (Q7) have P-value of .017, respectively and the result is significant at 5% level with F(1,71)= .5.931, hence, we reject the null hypothesis and asserts that there is significant relationship between Accounting Information System and manufacturing companies' growth.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.898 ^a	.806	.432	.11396

a. Predictors: (Constant), Q7

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	.077	1	.077	5.931	.017 ^b
Residual	.909	70	.013		
Total	.986	71			

a. Dependent Variable: Did your company adopt AIS
 b. Predictors: (Constant), Q7



Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	1.182	.070		16.822	.000
	Q7	.091	.037	.279	-2.435	.017

a. Dependent Variable: AIS adoption
 For Q7, see table 5
 Source: SPSS output based on authors imputation

There Is No Significant Relationship between Accounting Information System and Manufacturing Companies' Capital Expansion

The result on table 14 shows that 89.0% of the total variation in the dependent variable (AIS adoption) is being explained by the independent variable (Q8), the adjusted R² also shows that the regression model obtained can be used to predict the rate at which AIS adoption enhances manufacturing company's capital expansion. Findings on table 16 shows that the independent variable tested (Q8) have P-value of .017, respectively and the result is significant at 5% level with F(3,71)= .323, hence, we reject the null hypothesis and asserts that there is significant relationship between Accounting Information System and manufacturing companies' capital expansion.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
	.991 ^a	.890	.623	.11483

a. Predictors: (Constant), Q8

Model		Sum of Squares	Df	Mean Square	F	Sig.
	Regression	.063	1	.063	.323	.032 ^b
	Residual	.923	70	.013		
	Total	.986	71			

a. Dependent Variable: Did your company adopt AIS
 b. Predictors: (Constant),

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
	(Constant)	1.154	.065		17.635	.000
	Q8	.077	.035	.253	-2.186	.022

a. Dependent Variable: Did your company adopt AIS
 For Q8, see table 5
 Source: SPSS output based on authors imputation



There Is No Significant Relationship between Accounting Information System and Manufacturing Companies' Accessibility to Loan

In testing hypothesis 5 of this study, table 17 revealed that 65.9% of the total variation in the dependent variable (AIS adoption) is being explained by the independent variable (Q9), the adjusted R^2 also shows that the regression model obtained can be used to predict the rate at which AIS adoption enhances manufacturing company accessibility to loan. Thus, table 19 also shows that the independent variable tested (Q9) have P-value of .018, respectively and the result is significant at 5% level with $F(1,71)= 4.73$, hence, we reject the null hypothesis and asserts that there is significant relationship between Accounting Information System and manufacturing companies' accessibility to loan.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.852 ^a	.659	.511	.11483
a. Predictors: (Constant), Q9				

Model	Sum of Squares	Df	Mean Square	F	Sig.
Regression	.063	1	.063	4.78	.032 ^b
Residual	.923	70	.013		
Total	.986	71			
a. Dependent Variable: Did your company adopt AIS					
b. Predictors: (Constant), Q9					

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
(Constant)	1.154	.065		17.635	.000
Q9	.077	.035	-.253	-2.186	.032
a. Dependent Variable: Did your company adopt AIS					
For Q9, see table 5					
Source: SPSS output based on authors imputation					

There Is No Significant Relationship between Accounting Information System and Manufacturing Companies' Profitability

The study also revealed on table 20 that 37.4% of the total variation in the dependent variable (AIS adoption) is being explained by the independent variable (Q10, Q11, Q12 and company's profitability in the past five years), the adjusted R^2 also shows that the regression model obtained can be used to predict the rate at which AIS adoption enhances manufacturing company effectiveness. All the independent variable tested (Q10, Q11, Q12 and company's profitability in the past five years) have P-value of .028, .000, .010, 000 and .044 respectively and the result is significant at 5% level with $F(4,71)= 2.809$ (table 21 and 22). Hence, we reject the null hypothesis and assert that there is significant relationship between Accounting Information System and manufacturing companies' profitability.



Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.612	.374	.123	.2321

a. Predictors: (Constant), Q10, Q11, and Q12.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.123	4	.015	2.809	.011 ^b
	Residual	.865	83	.023		
	Total	.447	71			

a. Dependent Variable: Did your company adopt AIS
 b. Predictors: (Constant), Q10, Q11 and Q12

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.095	.055		20.018	.000
	Q10	.048	.121	.185	.393	.465
	Q11	.123	.127	.000	.000	.000
	Q12	.020	.048	.000	.000	.000
	Profitability in the past five years	.000	.004	.008	.071	.044

a. Dependent Variable: AIS adoption
 For Q10 – Q12, see table 5
 Source: SPSS output based on authors imputation

Conclusion and Recommendations

This study examines the role of accounting information system in enhancing manufacturing companies' effectiveness, decision-making, growth, capital expansion, accessibility to loan and profitability. Therefore, the sixth null hypothesis of this study that states that there is no significant relationship between accounting information system and manufacturing companies' profitability was also rejected. The study however, concluded that accounting information system have a statistical significant relationship with manufacturing companies' effectiveness, decision-making, growth, capital expansion, accessibility to loan and profitability in Nigeria.

Sequel to the findings and conclusion of this research, the following recommendations were made to manufacturing companies: Starting from the commencement of business, AIS should be incorporated to Finance and Account Department (FAD). Invest more on AIS in order to increase the level of operations and have more effect on their performance and subsequent training on AIS should be made available to concern staff.

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