

Strategic Influence of Information Technology on the Performance of Nigeria Federal Road Safety Commission

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Abstract

The study examined the influence of Information Technology (IT) on the performance of Federal Road Safety Commission of Nigeria. The aim is to determine the extent to which it influences the performances of road safety. Stratified random sampling techniques and incidental sampling techniques was use to capture the respondents across the organisation Analysis of Variance was adopted to test the null hypothesis that information technology deployed by the Federal Road Safety Commission do not help drive their processes to deliver superior performance. The result revealed that Information Technology deployed by Nigerian Federal Road Safety Commission was effective and aids the processes and performance of Nigerian Federal Road Safety Commission. FRSC staff ability (skills) to cope with the available IT was fair but not significant.

Keywords: *Information Technology, Federal Road Safety Commission of Nigeria, Processes.*

1. Introduction

Information technology has become critical to the operations and competitiveness of organization around the world. Today more than ever organization must capitalize on changing technology to increase profitability, expand market opportunity, and improve customer service and productivity. Evaluating Nigerian road safety performance as result of strategic investment in information technology is the focus of this paper.

Two propositions about information technology as a strategic resource in the Nigerian Federal Road Safety Commission were proposed. The first proposition is that Nigerian Federal Road Safety Commission use information technology to drive their processes and deliver superior performance to meet and surpass masses expectation. The question then is Does IT usage has significant difference on the performance of Federal Road Safety Commission?

The second proposition based on the resource based theory (RBV) strategy is that Nigerian Federal Road Safety Commission investment in IT has enable higher communication, good road usage, lower accident, and death and crime rate.

This paper viewed IT as a resource based view strategy (operational processes) using both quantitative and qualitative data analysis and series of interviews with senior road safety personnel.

2. Literature Review

Despite the growing recognition on the fundamental impact of information technology in determining a firm competitive strength for future business performance, most researchers are yet to specify the underlying mechanism linking it to firms' operational processes. Several studies have been conducted in a variety of manufacturing and service industries. Studies by strassmann (1990) found no correlation between IT expenditure and return on investment in a sample of 38 service sector firms. Dos santos et. al (1993) complement strassmann findings on IT spending and returns on investments. He concluded that investment in IT has no significant effect on firm returns. Similar research by Crons and sobol (1983) found that IT impact was not significant on firm performances. This perhaps implies that IT has no impact on firm's productivity. Brynjolfsson and Hitt (1996) however caution that the findings do not account for economic theory of equilibrium. In his own view Alpar and Kim (1990) noted that the methodology used in assessing IT impact can also significantly affect the result. Corroborating this view Denison (1989) stressed that the over estimation of IT input for any given amount of output will lessen the unit productivity. This suggest that researcher must endeavor to pay much attention to the measurement and methodology used in studies before embarking on a thorough research work bearing in mind that key ratios can be misleading. One the other hand Lubbe (2004) studies of IT impact on Small and Medium Enterprises (SME) found a significant correlation between IT and SME performance.

The findings falls in line with the work of Dykman (2003) where a correlation between firms output and IT investment was established. More recently studies by Lucas et al (2002) confirms that investment in IT create a sustainable competitive advantage. This finding confirms the argument of Hui and Plant (2001) that the promise of increased advantage in output was the driving force behind large scale investment in IT since 1970's. The findings above suggest that technology and societal changes are moving the global market. Using a different data set, weil (1990) was able to disaggregate IT by use and found that significant productivity could be attributed to transactional types IT (Data processing). This support the argument of Santhanam and Hortono (2003) that resource based view can be used to investigate the impact of IT investment on organization performance. In this paper attention is restricted to research that has drawn upon the organization procedure (RBV) of IT investment firms on the performance of Nigerian Federal Road Safety Commission.

2.1 Conceptual Framework

The study is premised on the resource base theory of firms grounded on the perception that a firm's internal environment in terms of its resources and capabilities are more critical to the determination of strategic action than its external environment. Imai (2007) viewed resource based view as a strategy that emphasizes economic rent creation through distinct capabilities. He argued that each organization is a collection of unique resources and capabilities that provides basis for its strategy. This view was supported by barney (1991) that abnormal rent can be earn from firms resources and sustained competitive advantage that are valuable, rare, imperfectly imitable and nonsubstitutable.

Ovia (2006) further attest to this in his study on IT deployment on corporate strategy. He concluded that investment in IT resources boost banks performance. This suggests that the performance of a firm is shaped by its available resources. The basic logic of resource based view of a firm starts from the claim that the aim of the firm and the desired outcome of managerial effort is sustainable competitive advantage as it allows firms to earn economic rent (kapelko et .al 2005). This theory was supported by Imai (2007), where company's ability to assemble and exploit an appropriate combination of resources was identified as a key factor required to achieving a sustainable competitive advantage. This means that a sustainable competitive advantage can be obtained if "the firm effectively deploys the resources in his product market" (Fahy and smithee 1999). This study is therefore exploring this concept on government agencies using the Nigeria Federal Road Safety Commission.

3. Methodology

The study was carried out in the head office of the Nigerian Federal Road Safety Commission. The entire staffs of the federal road safety commission whose duties are enhance and connected to information technology usage in the commission constituted the population of study. The identified department ranges from operations unit to the special marshal and information technology units. The entire staff captured in these identified departments is total 112. The accident victims in government hospitals also constituted the population of study. Stratified random sampling techniques and incidental sampling techniques was use. The techniques was chosen to ensure that each identified functional department pertinent to the study has equal chance of been chosen and represented. The choice of incidental sampling techniques was due to the fact that the researcher cannot ascertain the situation and cooperation of the accident victims in the hospitals. Both approaches are expected to help reduce the variability of the study. The study also made use of data from 27 respondent in the operations unit, 20 from the special marshal units and 18 from the information communication technology (ICT) unit. The entire sample size is totaled 65. The study make use of primary data, two questionnaires was design to retrieve data from the identified respondent. The first questionnaire was targeted at the respondent in the identified department while the second questionnaire was aimed at accident victims in the selected government hospitals. The data for the study was examined using both descriptive and inferential tools. The descriptive tool involves – tables, percentages and frequency distribution while the inferential tools deployed for the study is regression tools and ANOVA.

4. Result and Discussions

From the above table 4.1, it was revealed that 31% of the staff had degrees in Msc/PhD 15% had Bsc/HND 37% had professional technical education while 17% had NCE to OND. 46% of the staff had a minimum of HND qualification while 54% had a minimum of OND/NCE. There is an indication that quite a number the staffs of the commission are taught people which are very good for a sensitive commission like FRSC.

Table 4.2 indicates that 42% of the respondents comprising 27 opined that they have been sent on training before while 58% of the respondents comprising 38 staffs denied ever been sent on training. From the information above it suggest that the commission had the intention to send the staff on training but this effort should be intensified to build a more vibrant workforce.

The table suggested that majority of the respondent that is 62% concurred that the training is usually a yearly affairs while 15% that is 10 respondents viewed it as a biannual event 8% of the others viewed it as

a quarterly event. There is an indication from the majority view that it does come on a yearly basis while for the management staff it is a quarterly affair.

Table 4.4 is an indication of the relevance of training to duties performed in the offices. From the above data it was discovered that 58% which is 38 respondents opined that the type of training received is relevance to the duties they performed while 42% that is 27 respondents disagreed that it did affect their duties.

Table 4.5 indicates the activeness of the call Centre to various SOS messages received by accident victims. The table above displays the frequency of calls received from accident points by the call Centre. The table shows that the bulk of the calls came in between the hours of 30 – 60 minutes which comprises of the 60% of the SOS calls this a reflection of the frequency of accident witness in the country while 20 which comprises 31% of the respondent opined that the calls are usually between the 1-2 hours interval. This means that the frequency of accident on Nigeria roads is higher at every 30mins-2hrs interval which comprises 91% of the respondent view thus FRSC must devise strategies that is capable of minimizing accident on the roads.

The study discovered that 72% of respondent in the server room opined that the server was effective in the discharge of its duties to FRSC, while 28% which comprises of 18 respondents have differed view that the server was fair.

There is an indication that the server is performing since there is no perfect condition exist in the use of IT equipment in modern development.

Results from table 4.7 gives a clear indication that the server hardly breakdown. This further confirms the responses in table 4.6. It is evidence from the response that 77% of the respondent subscribe to it that the server may experience break down between 4-6 months intervals. This shows that the server hardly experience breakdown. However there is room for improvement as the server gradually experience more contact.

Table 4.8 analysis of the effectiveness of FRSC service delivery noted that 55 % of the respondent opined that FRSC service delivery has been effective while 18% totaled 12 respondent believe that it was fair. 27% that is 19 respondents were of the opinion that the service rendered was not effective. There is an indication that the server of FRSC has no doubt improve considering the views of the 55% majority respondent totaled 39.

Inferential Analysis of the Effectiveness of Information Technology Deployed By FRSC Nigeria.

The first and the most important step in carrying out the assessment of firms efficiency is the identification of input–output variable (Thanansoulis 2003). Stigler 1976 noted that “measured inefficiency may be a reflection of a failure to incorporate the right variables and the right constraint to specify the right economic objective of a production unit. “Paradi and schaffnit (2004) however stressed that no consensus exist on the most appropriate variable to apply in analysis. For the purpose of the study, the approach taken for the measurement of information technology as a resource input is to produce a given level of operational procedure where information technology is deployed to aid FRSC operations via a medium that makes for speedy communication, utmost flexibility, and convenience irrespective of place, time and distance. The deployment of IT to FRSC service delivery has made FRSC of Nigeria operations synonymous to E-service rendered, as such call Centre services which covers the service rendered by the FRSC of Nigeria was used as a proxy for it input. The IT (input) was however classified

in to three broad categories – operations unit, special marshal and information technology units. The approach help capture how the FRSC deploy it in the discharge of their duties (fahy and smithee 1999).the approach is further consistent with the works of miller and rose (2003) where resource utilization revealed by efficiency was seen as an important RBV thinking because it reflects productive use of resources. The used of accident victims in government hospitals a single output as a proxy for performance is consistent with the works of Piesse and Thirtle (2000) and Thore et.al (1994)

A total of 80 and 70 respondents were randomly selected for IT usage and performance of FRSC in this study. However 65 and 70 questionnaires were retrieved from the respondent. Data for the study were analyzed with the use of statistical tools (ANOVA and Regression Model) to determine, if the Information technology deployed by the Federal Road Safety Commission help drive theirprocesses to deliver superior performance to meet and surpass Nigerian’s expectation and to determine if the FRSC staffs possess the required skills to manage the available IT in the sector.

The multiple *R* was use to select the model with the best fit, hence linear regression model with the highest multiple *R* and *R*² value of (.833, .694) was chosen. This approach was consistent with the works of Aworemi (2006).

Analysis of Variance was adopted to test the null hypothesis that information technology deployed by the Federal Road Safety Commission do not help drive theirprocesses to deliver superior performance to meet and surpass Nigerian’s expectation and the staffs of FRSC do not possess the required skills to manage the available IT in the sector was stated as:

$$H_0 = \mu_1 = \mu_2 = \mu_3 \dots \mu_n$$

Linear regression model adopted was mathematically represented as:

$$Y = f(x_1, x_2, x_3, \dots x_n)$$

Y = Service delivery

X₁ = Educational Qualification

X₂ = Staff training

X₃ = Call Centre Response

Thus it is explicitly represented as:

$$Y = \alpha + \beta_1 x_1 + \beta_2 x_2 + \beta_3 x_3 + \dots \mu$$

Table 1 showed an *F* –*VALUE* of 2.20. The ANOVA table tested the above hypothesis.

Table: 1 ANALYSIS OF VARIANCE RESULT OF IT DEPLOYED BY FRSC.

Model	Sum of square	df	Mean square	F
Between	5616.41	4	1404.1	2.206**
Within	337297.4	70	636.4	

** Significant at 5% level, Source: Field survey 2013.

The observed F-value of 2.20 was less than the table F-value of 2.38 which was significant at 5% level of significance. This informed the decision to nullify the null hypothesis that information technology deployed by the Federal Road Safety Commission do not help drive theirprocesses to deliver

superior performance to meet and surpass Nigerian’s expectation. The outcome implies that information technology deployed by FRSC has no doubt help drive the commission effort to deliver effective service for the state as such it is viewed more as a strategic necessity rather than a face lifting strategy. The commission should therefore focus on the developing technology that is flexible and capable of boosting their core areas of competence relative to the turbulent crime that characterize the environment they operate.

LINEAR REGRESSION FOR IT RESOURCES DEPLOYED TO AID FRSC OPERATIONS

Pre	Constant	Staff training	Call Centre	Educational qualification	F
dictors					
Coeff	346608.9	5.38**	9458.6**	172.67	400.4
t-value	93.310	11.088	32.072	.011	
std Error	3714.60	0.000	294.92	15114.9	
SPRC		.27	.804	.000	

**Significant 5% level, $R = .833$, $R^2 = 0.694$

Source: Field survey, 2013.

This means that service delivery in FRSC will increase by 5.38 for every existing training giving to the staff of the commission while holding the effect of other variables constant. This implies that as the Staff training persist Service delivery will increase by almost triple the existing performance and this was significant at 5% level of significance. The suggestion therefore is that staff training on IT issues is a necessary ingredient to achieve effective IT performance. Service delivery driven by IT has gained public loyalty and acceptance of FRSC effort thus signifying the level of confidence the Nigerian public has on IT deployed by FRSC to aid their services via relevant staff training on IT development. The coefficient ($\beta = 9458.6$) of Call Centre Response shows the extent of its effectiveness, the call centre responded to technology innovations by 9458units. This is significant at 5% level of significance thus suggesting that Call Centre are of vital importance to the accident victims under distress, it is a reflection of Nigerians patronage and confidence reposed on the strategy. The result further confirmed that every unit patronage of the Call Centre resulted to a performance level that double the impact of staff training. This evidence further renewed the call for increase investment in IT, especially those that are public driven to boost the performance of FRSC. Educational qualification with a coefficient of ($\beta = 172.67$) was also seen to have improved the performance of FRSC. For every performance level attained Education accounted for 172.67. This was however not significant at 5% and 10% level of significance.

5. Conclusion and Recommendation

The study focuses on the available information technology deployed by Nigeria federal road safety commission. This is to ensure that the existing structure in the FRSC is adequately well catered for to enhance effective service delivery. To achieve this aim the study highlighted the specific objectives of examining the effectiveness of IT as a tool deployed by Nigerian Federal Road Safety Commission, determine the extent to which information technology aided the processes and performance of Nigerian Federal Road Safety Commission and to ascertain the existing staff ability (skills) to cope with the available IT in FRSC?

The study revealed that information technology deployed by FRSC is effective and this was significant at 5% level of significance.

In addition, it confirmed that callCentre strategy deployed by the commission increases the performance of the commission by almost triple the rate of the previous performance the strategy was significant at 5% level of significance. The study further discovered that staff training also contributed to the performance of the commission and it was significant at 5% level of significance, a reflection of the unique convenience offered FRSC staff and public through IT. Mean while, education was also found to have contributed positively to FRSC performance and this was significant at 5% and 10% level of significance.

In summary, it was discovered that the Nigerian public has a lot of confidence in the level of IT deployed by the FRSC to improve the quality of the service rendered as witnessed in level of patronage experienced through distress call by the call Centre.

5.1 Conclusion

Based on the findings and discussion of the study the following conclusions were reached:

- Information Technology deployed by Nigerian Federal Road Safety
 - Commission was effective.
- Information Technology has aided the processes and performance of Nigerian Federal Road Safety Commission.
- FRSC staff ability (skills) to cope with the available IT was fair but not significant.

5.2 Recommendation

The following recommendations were based on the findings of the study:

- 1** More relevant training should be giving to staff of the IT unit in FRSC.
- 2** Better and more awareness should be giving to Nigerians on how to assess the call centers in terms of distress during accident.
- 3** The quality of staffs to be recruited should be well screened to ensure that they can cope with the latest technology.

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Appendix

Table 4.1 EDUCATIONAL QUALIFICATION OF RESPONDENT

	Frequency	percentage
Msc/PhD	20	31
Bsc/HND	10	15
Professional	24	37
OND/NCE	11	17
Total	65	100

Source: Field Survey 2013

Table 4.2 QUALITY AND FREQUENCY OF TRAINING GIVING TO THE STAFFS.

Response	Frequency	%
Yes	27	42
No	38	58
Total	65	100

Source: Field Survey 2013

Table 4.3 Frequency of Training giving to Staff.

Respondent	frequency	%
Monthly	–	–
Quarterly	5	8
Biannually	10	15
Annually	40	62
None	10	15
Total	65	70

Source: Field survey 2013.

Table 4.4 Relevance of training to duties performed by the staff.

Respondent	frequency	%
Yes	38	58
No	27	42
Total	65	100

Source:Field survey 2013

TABLE 4.5 CALL CENTRE RESPONSE

30-60 mins	39	60
1-2hrs	20	31
3-5hrs	04	06
6-10hrs	02	03
Total	65	100

Source: Field survey 2013

Table 4.6 SERVER EFFECTIVENESS

Response	frequency	%
Very effective	15	23
Effective	32	49
Fair	18	28
Total	65	100

Source: Field survey 2013

TABLE 4.7 FREQUENCY OF SERVER BREAKDOWN IN FRSC SERVER ROOM.

Response	frequency	%
Weekly	-	-
Monthly	10	15
Quarterly	18	28
Biannually	32	49
Yearly	05	08
Total	65	100

Source: Field survey 2013

TABLE 4.8 EFFECTIVENESS OF FRSC SERVICE DELIVERY

Response	frequency	%
Very effective	14	20
Effective	25	35
Fair	12	18
Not effective	19	27
Total	70	100

Source: Field survey 2013