

I.T Policy Implementation in Organizations: Case Study of Federal Institute of Industrial Research, Oshodi, Nigeria

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Abstract

This study discussed issues related to effective implementation of Information Technology Policy in an organization, with a focus on the Federal Institute of Industrial Research, Oshodi, Nigeria. The participants of the study were staff of the selected organization. A sample size of 124 was selected from the target population of 180 using Sloven's formula of sample size computation. The data analysis was made using Statistical Package for Social Sciences (SPSS 20). There is a positive strong significant correlation between Information Technology Policy Issues: Attitude towards IT Policy, Awareness, Policy enforcement, Policy updating and review and Implementation of IT Policy. Findings indicated that the t-statistic and significance level of Information Technology Policy Issues are 0.713 and 0.478 respectively, which is greater than P-value 0.05. The beta value of Information Technology Policy Issues is 0.069 which is less than the acceptance level. The implication is that change of 1% in Technology Policy issues will course a change of 0.067 percent in the Implementation of the Policy which is very minute and negligible. IT policy issues has significant effect on the implementation of IT policy. Therefore, IT Policy Issues when emphasized in the organization will lead to improved implementation of Information Technology policy.

Keywords: Altitude; Awareness; Enforcement; Updating and Review

Introduction

Security needs to be driven by both technology and policy in order to serve as a means of protection for information, and in line with the business aims of the organizations. In addition to creating useful, appropriate policy, it is also important that the personnel that are subject to the policy are aware of its existence and this is one of the major IT policy problems in Federal Institute of Industrial Research, Nigeria. Failing to make users aware of a policy can lead to a decrease in security through user behavior that does not comply with the policy, be it intentional or not (D'Arcy *et al.* 2009, Omwono *et al.* 2016).

Ajavi and Kayworth (2014) simplified the definition by describing ICTs as an electronic means of capturing, processing, storing and disseminating information. In this study, the terms IT and ICTs is used nearly synonymously and in a somewhat broad sense. Machunwangliu (2015) discussed about internet facilitating a wider interactive communication and network which can impact individuals/organizations. World Summit on the Information Society (WSIS, 2013) emphasized the issue of exploiting the full potential of ICT to bring access and support sustainable development. At the organizational level, it is widely accepted (though not fully appreciated) that the integration of ICT in organizational functions is necessary for increased efficiency, cost-effectiveness, and competitiveness. The tendency unfortunately has been, more often than not, to approach such integration from the technology level, leading to escalating costs without corresponding efficiency gains (Ramadhan and Robert, 2016). This leads to disillusionment, skepticism, and reduced organizational commitment and resources to support ICT services and systems in the case studied: Federal Institute of Industrial Research, Nigeria.

There are several ways of controlling IT policy procedures in organizations; in the opinion of Bulgurcu *et al.* (2010), some organizations use trainings and awareness programs for the employees so as to acquire necessary skills and education against possible threats. While many organizations on the other hand use technical and administrative measure for their staffs to secure organizational information properties (Kolkowska and Dhillon 2012). There are many studies on IT policy in organizations, these studies can be grouped into two; the first group is concerned with changing employee attitude towards IT policy compliance (Bulgurcu *et al.* 2010; Warkentin *et al.* 2011). In these studies, various theories such as the social cognitive theory (Bandura 1997), the social bond theory (Mediel and Tawanda 2012), and the theory of protection motivation (Warkentin *et al.*, 2011) are adopted for investigating employees interactions with information security mechanisms for IT policy compliance. This leads to the identification of various socio-organizational factors affecting the adoption of information security compliance. Rewards for compliance, for example, have been found to have a significant impact on motivating employees' intention towards IT policy compliance (Herath and Rao 2009).

The second group concentrates on understanding employees' behavior towards information security compliance (Ifinedo, 2013; Siponen *et al.* 2010; Son, 2011). In these studies, several behavioral theories including the theory of planned behavior and reasoned action (Kolkowska and Dhillon, 2012), the deterrence theory (Straub Jr., 1990), the threat avoidance (Liang and Xue, 2010; Warkentin *et al.*, 2011) and moral judgment have been explicitly or implicitly adopted for better understanding how security conscious behaviors are shaped in the adoption of IT policy. The fear of sanction of non-compliance with information security policies, for example, has been found to have a significant impact on employees' behavior (Herath and Rao, 2009). The Objectives of this Study are to study key issues that affects Information Technology Policy Implementation at the Federal Institute of Industrial Research, Nigeria and to establish the relationship that exists between Information Technology Policy Issues and Implementation of IT Policy at the Federal Institute of Industrial Research, Nigeria.

Statement of Research Problem

Implementation of information and communication technology (ICT) services and systems in organizations generally pose a lot of challenges that, if not properly addressed, lead to heavy investment without the corresponding organizational efficiency gains (Tusubira and Mulira, 2014). Unless and until the real barriers are understood and addressed, this situation will continue unabated. The manner in which the Federal Institute of Industrial Research, Nigeria, has dealt with policies has resulted in a culture within the organization in which employees ignore policies which they do not wish to comply with. Oluwafemi and Agada (2015) are of the opinion that successful implementation of ICT policy has the capacity to cut cost of coordination, communication and information processing; and many businesses have taken advantages of this. Without identifying issues related to effective implementation of IT policy, the implementation of IT policy will not be successful in any organization. Therefore, it is important to identify, study and discuss some important issues that are related to successful implementation of IT policies at the Federal Institute of Industrial Research, Nigeria. This will enable the management to identify problems related to IT policy implementation and proffers solutions to them. Whitman and Mattord (2009) emphasized that it was very significant for the organization to make IT policy rules always fresh in the heart of the employees, remembering IT policy and adhering to it by the employees is one of the greatest challenges in the implementation of IT policy. There may be several other contributing factors and numerous challenges that might have played major roles in influencing ICT policy implementation in any organization and this study discuss some of them.

Conceptual Framework

The conceptual framework indicates the independent variable and dependent variable in the topic under investigation and the effects independent variable has on the dependent variable. The independent variable is IT Policy issues while the dependent variable is information technology policy implementation. The IT Policy Issue was examined in terms of attitude towards IT Policy, awareness, policy enforcement and policy updating and reviewing.

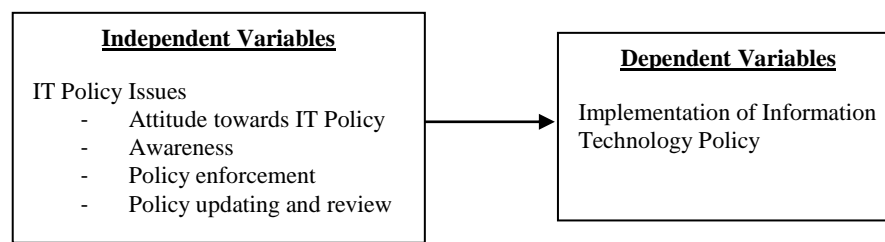


Figure 1: I.T Conceptual Framework

Issues with Information Technology Policy

i). *Attitude towards I.T Policies*

Prior research suggests that an individual's personal propensities impact the use of technology. Even though companies commonly instruct and sometimes even mandate the way professionals use technology in organizational settings, individual's personal orientation toward technology also impacts the way professionals use technology to carry out work related tasks (Heli *et al.*, 2017). Currently a number of information security policies are scoffed at when they are ready for implementation. Successful implementation of ICT services and systems involves literally all employees and customers of the organization. It is therefore critical that they own the policy and the plan, otherwise organizational inertia and deliberate obstruction will lead to failure.

ii). *Awareness of Policies*

Awareness of relevant policies is next to non-existent in many organizations. Observation of the major ICT department within Federal Institute of Industrial Research, Nigeria highlighted this issue. Employees were asked what ICT security policies they were aware of, and most could only cite the acceptable use policy. It is assumed that this is the only one because it is mandatory for employees on induction to sign that they have read and understood the document. According to Knapp *et al.* (2009), the importance of security awareness training and education cannot be overstated and that one of the basic steps in coping with IT policy risk is the establishment of an awareness training program. Organizations are advised to educate the employees at various level against possible security threats, organizations should also find a way of making it mandatory or by encouragement for the employees to abide by the IT policy procedures in their routines, and this particular assertion was also established by Akande and Yinus (2013). Awareness and training should entail updating and reviewing at an interval of time so that employees will find it so easy to address any security challenge at any point in time (Lim *et al.*, 2009). They also stress the need to enforce employees in attending all these awareness and training programs, which in the opinion of the researcher will enable the organization to maximally reap the benefit of implementation of IT policy. Awareness is an important measure to address approach or manipulate the conduct of employees towards IT policy. They also state that awareness and training is not only about knowing the IT policy but to understand the reasons for the policy and also the consequences of none compliance. McAdam and Parkinson (2014), make a recommendation that different awareness and training programs should be organized for different levels of employees in accordance with job type and environment. Ribiere and Schulte (2014), concluded that violations of IT policy by the employees are merely due to negligence and ignorance.

iii). *Policy Updating and Review*

The IT Policy of many organizations are hardly reviewed and often not following the trend of information technology developments. The content of these policies however are in most cases not reviewed in depth before all the policies are published. Consequently, a number of

policies including the ICT Security Policy have not been updated and their contents not reviewed. A number of these policies were originally written with respect to outdated machines and not useful for the current organization mission and vision.

iv). ***No Formal non-compliance Reporting***

The reporting of policy breaches and non-compliance in a formal, published and recognizable process does not exist. Employees are not aware of their responsibilities, how they should report issues, and who to report them to. Consequently, many issues are not referred to the appropriate areas and ICT security teams were often not involved.

Litrature Review

In the study of Harrington (2011), it was stated that there is no opposition to the fact that policy provide protections to ICT environment in an establishment. The essence of IT policy in an organization is to inform the employees of their duties to protect information resources and the importance of the secured communications (Mediel and Tawanda, 2012). According to Ribiere and Schulte (2014), IT policy helps an organization to secure its intellectual assets, to reduce risk, to create an enabling regulation and as well to protect the privacy of the employees. The aforementioned studies stressed the real importance of IT policy which by investigation is not the current realities at the Federal Institute of Industrial Research, Nigeria. Base on the studies of Alkalbani *et al.* (2014) and Ullah *et al.* (2013), lack of adherence to IT policy can cause problems to the organization, problem like security breaches, waste of resources, non-acquisition of clients and even legal issue. Although; there are challenges in adopting IT policy due to some reasons which include involvement of human behavior as part of organization culture, evolving nature of the technologies required, legal and security requirements and maintaining both employees and the stakeholders' confidence and trust (Steinbart *et al.*, 2012). Existing studies predominantly focus on individual's attitudes and behavior in IT policy compliance. There is, however, more to be done on information security compliance with respect to the understanding of the complex socio-organizational dynamics associated with information security in organizations (Vance *et al.*, 2012). An investigation of such a dynamics leads to better understanding of the interactions among organizational, individual and technical factors for shaping the adoption of IT policy in organizations (Bulgurcu *et al.*, 2010). Investigating information security compliance at the organization level through empirical research based on different theoretical lenses would advance the current knowledge in the field (Vance *et al.*, 2012). This current study attempts to identify the most significant determinants of socio-organizational factors at the organization level for adopting IT policy in organizations.

The issue of gaps between ICT policy design and their outcomes is the subject of debate in academic research on information systems in developing countries (Naveed *et al.*, 2009). Several developing nations are dealing with typical ICT issues such as lack of appropriate products, cost of ICT devices, education, local language content, human resources and robust regulatory framework for ICT growth. In order to overcome these challenges, governments in developing countries are designing and adopting ICT policies and action plans. The policies and action plans are important tools for governments in developing countries in attracting foreign investments (Naveed *et al.*, 2009). Policies are instruments used by governments, corporations, and enterprises to direct their efforts towards desirable goals. In technology development and increasing industrial competitiveness, developing countries governments have tried different policies such as selective intervention by picking the "national champions" (Andemariam, 1999). The local culture is one unique institution which strongly determines which development intervention will succeed and which will fail.

Methodology

Research Design

The study adopted a cross-sectional approach (surveying) in order to analyze data collected from the target population within a specific point in time; this is because the study intends to establish

the kind of the relationship that exists between IT policy issues and implementation of IT policy at the selected organization.

Study Population

The target population of this study was 180 individuals consisting of the staff members of the selected organization (Federal Institute of Industrial Research in Nigeria). The 180 individual were selected across the ten departments of the organization. The researcher chose the organization due to ease of access to the required information among other reasons.

Sample Size

The sample size for this study was 124 respondents who were selected from the target population of 180. This sample size was arrived at by using Sloven's formula of sample size computation which states that; $n = \frac{N}{1+Ne^2}$ (Oso and Onen, 2005). Where n is the sample size, N is the target population and e is the level of significance, which is 0.05. Therefore;

$$n = \frac{180}{1 + 180(0.05)^2} = 124$$

Table1: Study population and sample size table

S/N	Department	Target population	Sample size
1	Food technology	17	12
2	Bio technology	15	10
3	Chemical, fiber and environmental technology	14	10
4	Project design and development	30	20
5	Planning, technology transfer and information management	23	16
6	Human resources management	27	18
7	Extension and linkages	17	12
8	Production, analytical and laboratory management	16	11
9	Accounts	08	6
10	Director general's office	13	9
	Total	180	124

Sampling Procedures

To select the sample of 124 respondents out of 180 target population, the sampling technique was random sampling, in which every employee in the various departments has equal chance of taking part in the study. According to Amin (2005) randomization is effective in creating equivalent representative groups that are essentially the same on all relevant variables thought of by the researcher.

Data Sources

The researcher used both primary and secondary data, and the source of the secondary data are records and documents from the case study organisation. The data collection instrument in this study was basically questionnaires. The questionnaires were administered personally by the researcher to the respondents and collected after it was filled. The questionnaires comprised of closed ended questions that required the respondents to answer all the questions to the best of their knowledge. The answers were in form of four points Likert Scale which were strongly disagree, disagree, agree and strongly agrees with the codes 1, 2, 3 and 4 respectively. The questionnaires were used because they are cheap, quicker, they cover many respondents, and they are likely to be free from bias and can give accurate information since respondents take their time to answer the questions and respondents' identity was anonymous (Prabhat and Meenu, 2015).

Validity of the Instruments

This study looked at face validity and construct validity. Face validity was carried out by giving the questionnaires to two experts to check whether the questions are relevant to the contents. Content validity was done by subjecting the researcher devised questionnaires on effect of IT Policy Issues on implementation of IT policy in the selected organization (FIIRO) to two experts for checking each item in terms of language, clarity, relevance, and comprehensiveness of the content. The items were rated as follows; 4 – Very relevant, 3 – Quite relevant, 2 – Somewhat relevant, 1 – Not relevant. The researcher then put the items in 2 groups, with categories 1 and 2 in one group and the other 3 and 4 in the other group. The researcher then calculated the Content Validity Index (CVI) using the formula below:

$$CVI = \frac{\text{Items rated as very relevant and relevant (3 and 4)}}{\text{Total number of items}}$$

For the instrument to be valid, the CVI should be within the acceptable statistical range of 0.5 to 1. If the fraction for the CVI is 0.7 and above, the instrument is said to be valid (Prabhat and Meenu, 2015).

Reliability of the Instruments

The test-retest technique was used to assess the reliability (accuracy) of the instruments. The researcher devised instruments were distributed to ten qualified respondents of the Federal Institute of Industrial Research, Nigeria and they allowed answering the questions in the questionnaires. These respondents were not included in the actual study. In this test- retest technique, the questionnaires were administered twice to the same subjects after the appropriate group of the subject was selected, then the initial conditions kept constant, the scores were then correlated from both testing periods to get the coefficient of reliability or stability. The tests and the trait measured if they are stable, indicated consistent and essentially the same results in both times and this indicated that the instruments produced reliable information.

Table 2: Validity and Reliability

Variable	Cronbach Alpha Coefficient	CVR (Content Validity Ratio)
Information Technology policy Issues	0.7225	0.8121
Implementation of IT Policy	0.8025	0.8633

The items were tested using Cronbach Alpha and it gave a reliability value of 0.79 which is above the recommended reliability of 0.7 (Prabhat and Meenu, 2015).

Administration of the Questionnaires

The respondents were requested to answer completely and not to leave any part of the questionnaires unanswered. The researcher emphasized retrieval of the questionnaires within five days from the date of distribution. On retrieval, all returned questionnaires were checked if all are answered. The data gathered was edited, encoded into the computer and statistically treated using the latest version of Statistical Package for Social Sciences (SPSS, Version 22).

Data Analysis

The study used simple frequency counts (frequencies and percentages) to analyze the profile of respondents. The frequency and percentage distribution was used to determine the demographic characteristics of the respondents. Descriptive statistical analysis was carried out on the data collected, after that, inferential statistical analysis was conducted. To understand the strength of relationship between IT Policy Issues and Implementation of IT policy, the researcher ran a correlation test using Person's product moment correlation coefficient.

Correlation

Table 3: Correlation

Variables	Mean	Standard Deviation	1	2	3
Information Technology policy issues (1)	2.4828	.82278	0.764**	(0.833)	
Implementation of IT Policy (2)	2.6265	.87165	.556**	0.693**	(0.761)

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

Findings in table 3 above show that the mean value of Implementation of IT policy is statistically acceptable and the correlation between Information Technology policy issues and Implementation of IT Policy is significant, which means that IT policy issues has significant effect on the implementation of IT policy.

Regression Analysis

Regression analysis was used to examine the level to which Information Technology policy issues determine Implementation of IT Policy and the results are presented below;

Table 4: Regression model for Organization Culture, Information Technology Policy Issues and Implementation of IT Policy

Model	Standardized coefficients		
	Beta	T	Sig
(Constant)	.191	2.679	.006
Information Technology Policy Issues	.069	.713	.478

a. Dependent Variable: Implementation of I.T Policy

b. Predictors: (Constant), Information Technology Policy issues

The regression analysis in table 4; shows that the t-statistic and significance level of Information Technology Policy Issues are 0.713 and 0.478 respectively, which is greater than P-value 0.05. The beta value of Information Technology Policy Issues is 0.069 which is insignificant and less than the acceptance level. The beta value shows that a change of one percent in IT Policy Issues will cause a change of 0.067 percent in the Implementation of IT Policy. The qualitative findings revealed that, IT policy implementation is still poor, not effective and below standard to improve performance of the organization. It was also revealed that IT policy implementation was still at its infant stage though steps were being taken to improve the policy with ongoing training of staff in the field of IT on policies.

However, there are quite a number of study participants who are of the opinion that, IT policy implementation was satisfactory, reliable and dependable, "...The IT policy in my organization states the purpose of IT policy, specifies the responsibilities of staff the organization in order to maintain a secure and standard working environment..." (Accountant). Other revelations were thus: the existing IT policy needed thorough review, modifications and a gap analysis since the current policy is not serving its purpose, though this can be addressed by proper funding. "...The current IT policy in my organization still needs to be reviewed. Updates and upgrades are still required in every section of IT to yield maximum benefits to the employees and the organization at large..." (The IT manager)

Discussions

The Correlation

Findings from the study indicated that the correlation between Information Technology policy issues and Implementation of IT Policy is strongly significant and positive. Also, the mean value of implementation of IT policy is 2.6265, is fair which indicates that there is acceptable level of implementation of IT policy at the Federal Institute of Industrial Research, Oshodi, Nigeria. Tsubira and Mulira (2014) argued that IT performance is characterized by high levels of effective IT policy structures and processes. There is a strong positive relationship between IT policy implementation and organizational performance. Gu *et al.* (2008) did not find a direct

influence of IT governance on IT investment performance in the USA and Canada. However, IT governance was found to moderate the relationship between IT capital and IT investments. Ribiere and Schulte (2014) suggest that IT policy effectiveness influences IT governance and Information Technology implementation success. Tusubira and Mulira (2014) noted that previous studies on the use of IT by organizations tend to focus on organizational characteristics without giving due emphasis to the characteristics of individuals

The Regression Analysis

Table 4 shows that the t-statistic and significance level of Information Technology Policy Issues are 0.713 and 0.478 respectively, which is greater than P-value (0.05). The beta value of Information Technology Policy Issues is 0.069 which is less than the acceptance level, thus insignificant. Therefore, Technology Policy Issues arguably has a positive impact on Implementation of IT Policy. The beta value showed that one percent change in Technology Policy Issues will cause a change of 0.067 percent in Implementation of IT Policy. The results are supported by Whitman and Mattord (2009) who concluded that IT policy is not prohibitive to implement but highly difficult to implement properly. In accordance to the work of George and Emmanuel (2014), implementation literally is accomplishing or carrying out a particular task or job, they went ahead to differently explain the word as interaction between goals and actions on a balance mode.

Conclusions

In general, this study discussed issues related to effective implementation of Information Technology in an organization and the role of IT Policy Issues in improving the implementation of Information Technology policy at the Federal Institute of Industrial Research, Oshodi, Nigeria. In particular, the study examined the relationships between the study variables. The relationships were strongly and moderately significant and positively related. It is evident from the study that IT Policy Issues when emphasized in the organization, will lead to improved implementation of Information Technology policy. Therefore, the research institute should align their Organisational policies that promote effective implementation of Information Technology. However, as many arguments for ICT planning prove, ICT implementation is a complex exercise and more research is needed to identify challenges, good practice and solutions for successful implementation.

In line with the findings and conclusions of the study, the following are recommended:

- i. The Organization should continuously investigate IT policy Issues affecting employees in an organization, since understanding and developing solutions to them increases employee motivation. Measuring motivation levels creates opportunities for management to review the motivation policies where the results are not satisfactory or maintain the motivation policies where the results are satisfactory.
- ii. The research organization should encourage employees to uphold and cherish organizational values, beliefs and practices since this will lead to improved implementation of IT Policy in the long run.
- iii. The research organization should attract and retain skilled and knowledgeable employees who are able to uphold and cherish organizational values, beliefs, practices and Information Technology Policy as these will improve already existing implemented IT policy in the organization.

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