INFORMATION RESOURCE MANAGEMENT AND ORGANIZATIONAL AGILITY OF TELECOMMUNICATION FIRMS IN PORT HARCOURT, RIVERS STATE

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ABSTRACT

The study discusses information resource management and organizational agility of telecommunication firms in Rivers State. The cross sectional survey design was used in the study. The study population constituted 100 leaders of telecommunications firms in Rivers State whose study sample was derived through census based on the focus of the study. Data was analyzed and results presented in tables showing the mean and standard deviation. The hypotheses were tested using the Spearman Rank Order Correlation Coefficient. The findings revealed a positive and significant relationship between information resource management and organizational agility using the Pearson Product Moment Correlation tool at a 95% confidence interval. The study concludes that Information Resource Management: Data Resource Management, Network Resource Management, and Software Resource Management significantly influences employee information resource management of telecommunication firms. It was therefore recommended that the leadership of telecommunication firms should adopt the tested attributes of information resource management in the study in order to enhance the organizational agility of telecommunication firms in Rivers State.

Keywords: Information Resource Management, Data Resource Management, Network Resource Management, Software Resource Management, Adaptability, Innovativeness

INTRODUCTION

Organizational Agility (OA) refers to the ability of an organization to respond and adjust itself for the sudden market changes and rapid innovative behaviors in the market (Navaro et al., 2015; Lu & Ramamurthy 2011; Sambamurthy et al. 2003). Based on the significant relationship between organizational agility and organizational productivity, the study expects to develop the missing interplay between KMO and OP through the interaction of OA. Owning an agile organization is a prerequisite and substantial to perform better in the turbulent economic environment. Therefore, this study suggests Organizational Agility (OA) as one of the key abilities of an organization to explore the KMO-OP relationship. OA refer to the ability of an organization to respond and adjust itself for the sudden market changes and rapid innovative behaviors in the market (Navaro et al., 2015; Lu & Ramamurthy 2011; Sambamurthy et al. 2003). OA is a fundamental requirement for firms to face for the change in main production factors to achieve goals and objectives of the organization, shareholders, employees, and other stakeholders. Thus, organizational agility necessitates firms to quickly manage their knowledge resources to respond to the dynamic environmental conditions of the business (Theyel & Hofmann, 2020; Navaro et al., 2015). OA recognized as a direct source of superior organizational performance.

When we look at factors such as development towards an information society and information intensive companies, the growth of new IT applications, establishment of derived research disciplines such as computer science and information systems and the growing investments in IT raise several important questions about the actions of modern companies and organizations. This includes the question of how to analyze and evaluate the consequences of IT in relation to business operation and development. From a business

perspective, there has in recent years been a growing interest in IT. This is clearly indicated by the massive increase in IT investments, and especially by the large number of books, articles and conferences on management, development, application and utilization of a company's information resources and/or IT. The "Information Resources Management Association" will conduct their seventh conference in 1996. The air is thick with topics such as "Information Resource Management" (IRM), "Information Technology Strategy", "Information Resources", "Strategic Management Information Systems", "Strategic Information Systems" and "Management Support Systems".

BASELINE THEORY

Dynamic Capability Theory

According to Liu et al, (2012) the dynamic capability theory postulates the firm's ability to adapt in dynamic market conditions as the critical source of superior performance. Dynamic capability affirmed the firm's ability to recognize, integrate, develop, envisage, and reconfigure internal and external capabilities to deal with environmental dynamics (Pavlou & El Sawy, 2011). Literature argues that information resource management as a fundamental capability of an organization may influence on the dynamic capability and enhance the organizational performance (Cepeda & Vera 2007; Haas & Hansen 2005; Sher & Lee, 2004). KMO as a vital capability, provide an intellectual basis for organizations to respond for the internal and external contingencies (Ambrosini & Bowman, 2009). Relating this theory to our study, we can mean that organizations (telecommunication firms) can increase their level of agility by the acquisition of hardware resources management, data resources management, and network resources management are interconnected for ease of communication.

LITERATURE REVIEW

Data Resource Management

The McKinsey Global Institute and McKinsey Center for Government (2013) have focused on the trend of open data, and released a report on the potential of data in "unlocking innovation and performance." The report enumerates benefits to making data more liquid, noting improving the efficiency and effectiveness of existing processes; making possible new products, services, and markets; and creating value for individual consumers and citizens (McKinsey, 2013). The report also (McKinsey, 2013) suggests consumers stand to gain by saving money through greater price transparency and using more information to make decisions. Studies find that there are social and public flows of benefits from data use in certain contexts, too. McKinsey (2013) pointed to the value created by open public data in terms of institutional transparency and accountability, and the potential it has to encourage innovation. It must be noted that the value added to firms from the availability of data and the use of this data may differ along the lines of what type of firm we are dealing with. Bergemann and Bonatti (2018) discuss different pricing strategies of information markets depending on whether we are treating competing firms, monopolists or oligopolists, for example. In addition, the sector context is important as Deloitte (2019) note in a published report that, "investment in analytics in the SME sector is set to be a key differentiator.

Network Resource Management

Ali (2010) posited that the ultimate aim of network resources and Information service is to supply its user with all the materials that he or she needs in order to do research, become more educated, empower him/herself, or simply be entertained. The explosion in published output, the sharp increase in bibliographic access of literature through online and off-line

databases on CDs decreasing library budgets along with high cost of published output have made it virtually impossible for libraries and documentation/ information centres to fulfil information needs of their primary clientele. Under such squeezing situation the best option left with the libraries is to optimize the output and utilize their resources through extensive sharing and networking. In view of the above, the traditional concept of ownership in collection development is gradually being replaced by access to information and knowledge without regard to location and format.

Software Resource Management

The existence of software has shifted the way of company, manufacturing, firms and individual people perform and coordinate their job. Its impact on the worldwide economy, environment and society in the context of innovations increase, enhanced productivity and improved social knowledge cannot be denied (Ihle et al, 2016). Furthermore, the machine, computer hardware and any electronic equipment depends on software to be functioned, they require each other and neither can be realistically used on its own. This make the quality of the software has become one of the important factors in determining the success of technical or commercial systems performance. Software functionality service quality reflects how well it complies with or conforms to a given design, based on functional requirements or specification. It can also be described as the fitness for purpose of a piece of software or how it compares to competitors in the marketplace as a worthwhile product4. Even though the software functionality service is one of the importance attributes towards software quality, there is still lack of review in software functionality service research and practice.

METHODS

The study utilized the census survey strategy where all 100 leaders of telecommunication firms in Port Harcourt were surveyed. Thus, 100 employees were investigated. The study used structured questionnaire as a means of generating primary data from the respondents of the study. Structured questionnaire was used to enable the researcher find out the attitude, knowledge and feelings of respondents on questions asked with respect to the study variables in order to enable the study derived very relevant responses. To ensure the internal reliability, the survey instrument was assessed by means of Cronbach alpha coefficient, using the statistical package for social sciences (SPSS). Hence, only the items that returned alpha values of 0.7 and above were considered. Cronbach's alpha was used for the coefficient of reliability (or consistency). To empirically evaluate the hypothesized relationships, the spearman's rank order of correlation coefficient (RHO) was adopted. The multivariate analysis which examines the moderating effect of information communication technology on information resource management and organizational agility of telecommunication firms in Rivers State was tested using the partial correlation techniques at 95% confidence interval. The results were presented with the help of SPSS version 23.0 software.

Table 1 Reliability Coefficients of Variables

S/No	Dimensions/Measures of the study variable	Number of items	Number of cases	Cronbach's Alpha
1	Data Resources Management	4	90	0.837
2	Network Resources Management	4	90	0.882
3	Software Resources Management	4	90	0.781
4.	Adaptability	4	90	0.747
5	Innovativeness	5	90	0.778
6.	ICT	5	90	0.728

Source: SPSS Output, 2023

Scatter graph is one of the techniques used in deciding whether a bivariate relationship does exist between interval scaled variables. In a bid to determine the existence and trend of this relationship, plotted scatter diagram is presented in Figure 1 below where Information Resource Management is plotted on the X axis and Organizational Agility as the criterion variable is on the Y axis.

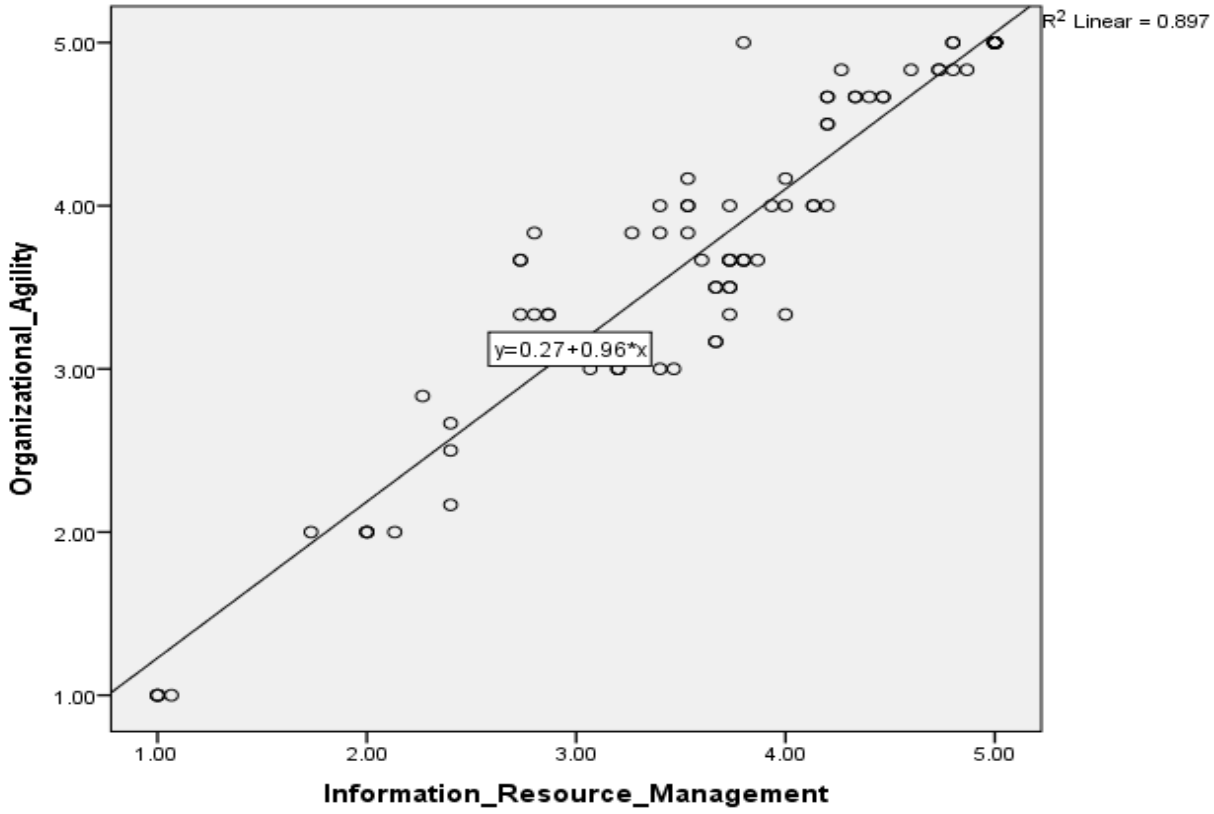

Fig 1: Scatter Graph for the Relationship between Information Resource Management and Organizational Agility

Figure 1 shows a very strong relationship between information resource management (independent variable) and organizational agility (dependent variable). The scatter plot graph shows that at its linear value of (0.897) depicting a very strong and positive relationship between the two constructs. The implication is that an increase in information resource management simultaneously brings about an increase in the level of organizational agility.

RESULTS

The study proposed seven research hypotheses to seek explanations for any existing relationship between information resource management and organizational agility of telecommunication firm as well as the moderating effect of information communication technology in such relationship. The Spearman Rank Order Correlation Coefficient was calculated using the SPSS 23.0 version to establish the relationship among the empirical referents of the predictor variable and the measures of the criterion variable. Correlation coefficients can range from -1.00 to +1.00. The value of -1.00 represents a perfect negative correlation while the value of +1.00 represents a perfect positive correlation. A value of 0.00 represents a lack of correlation. In testing hypotheses one to nine, the following rules were upheld in accepting or rejecting our alternate hypotheses: all the coefficient values that indicated levels of significance (* or **) as calculated using SPSS were accepted and therefore our alternate hypotheses rejected; when no significance is indicated in the coefficient r value, we reject our alternate hypotheses. Our confidence interval was set at the 0.05 (two tailed) level of significance to test the statistical significance of the data in this study. Table 2 below shows the result of correlation matrix obtained for information resource management and organizational agility. Also displayed in the table is the statistical test of significance (p - value), which makes us able to generalize our findings to the study population.

Table 2 Correlations Matrix for Data Resource Management and Organizational Agility Measures

			Data Resource Management	Adaptability	Innovativeness
Spearman's rho	Data Resource Management	Correlation Coefficient	1.000	.829**	.744**
		Sig. (2-tailed)	.	.000	.000
		N	90	90	90
	Adaptability	Correlation Coefficient	.829**	1.000	.764**
		Sig. (2-tailed)	.000	.	.000
		N	90	90	90
	Innovativeness	Correlation Coefficient	.744**	.764**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	90	90	90

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

Source: SPSS Output, 2023

The correlation coefficient (rho) result in table 2 was used to answer research question 1. Table 2 shows a Spearman Rank Order Correlation Coefficient (rho) of 0.829 on the relationship between data resource management and adaptability. This value implies that a very strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in adaptability was as a result of the adoption of data resource management. Therefore, there is a very strong positive correlation between data resource management and adaptability of telecommunication firms in Rivers State, Nigeria.

Similarly, Table 2 shows a Spearman Rank Order Correlation Coefficient (rho) of 0.744 on the relationship between data resource management and innovativeness. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in innovativeness was as a result of the adoption of data resource management. Therefore, there is a very strong positive correlation between data resource management and innovativeness of telecommunication firms in Rivers State, Nigeria.

Table 3 Correlations Matrix for Network Resource Management and Measure of Organizational Agility

			Network Resource Management	Adaptability	Innovativeness
Spearman's rho	Network Resource Management	Correlation Coefficient	1.000	.814**	.847**
		Sig. (2-tailed)	.	.000	.000
		N	90	90	90
	Adaptability	Correlation Coefficient	.814**	1.000	.764**
		Sig. (2-tailed)	.000	.	.000
		N	90	90	90
	Innovativeness	Correlation Coefficient	.847**	.764**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	90	90	90

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

Source: SPSS Output, 2023

The correlation coefficient (rho) result in table 3 was used to answer research question 1. Table 3 shows a Spearman Rank Order Correlation Coefficient (rho) of 0.814 on the relationship between network resource management and adaptability. This value implies that a very strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in adaptability was as a result of the adoption of network resource management. Therefore, there is a very strong positive correlation between data resource management and adaptability of telecommunication firms in Rivers State, Nigeria. Similarly, Table 3 shows a Spearman Rank Order Correlation Coefficient (rho) of 0.847 on the relationship between network resource management and innovativeness. This value implies that a very strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in innovativeness was as a result of the adoption of network resource management. Therefore, there is a very strong positive correlation between network resource management and innovativeness of telecommunication firms in Rivers State, Nigeria.

Table 4 Correlations Matrix for Software Resource Management and Measure of Organizational Agility

			Software Resource Management	Adaptability	Innovativeness
Spearman's rho	Software Resource Management	Correlation Coefficient	1.000	.870**	.745**
		Sig. (2-tailed)	.	.000	.000
		N	90	90	90
	Adaptability	Correlation Coefficient	.870**	1.000	.764**
		Sig. (2-tailed)	.000	.	.000
		N	90	90	90
	Innovativeness	Correlation Coefficient	.745**	.764**	1.000
		Sig. (2-tailed)	.000	.000	.
		N	90	90	90

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

Source: **SPSS Output, 2023**

The correlation coefficient (rho) result in table 4 was used to answer research question 1. Table 4 shows a Spearman Rank Order Correlation Coefficient (rho) of 0.870 on the relationship between software resource management and adaptability. This value implies that a very strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in adaptability was as a result of the adoption of software resource management. Therefore, there is a very strong positive correlation between software resource management and adaptability of telecommunication firms in Rivers State, Nigeria. Similarly, Table 4 shows a Spearman Rank Order Correlation Coefficient (rho) of 0.745 on the relationship between software resource management and innovativeness. This value implies that a strong relationship exists between the variables. The direction of the relationship indicates that the correlation is positive; implying that an increase in innovativeness was as a result of the adoption of software resource management. Therefore, there is a strong positive correlation between software resource management and innovativeness of telecommunication firms in Rivers State, Nigeria.

Table 5: Moderating Effect of Information Communication Technology

Control Variables			Information Resource Management	Organizational Agility	ICT
-none-[a]	Information Resource Management	Correlation	1.000	.947	.885
		Significance (2-tailed)	.	.000	.000
		Df	0	88	88
	Organizational Agility	Correlation	.947	1.000	.867
		Significance (2-tailed)	.000	.	.000
		Df	88	0	88
	ICT	Correlation	.885	.867	1.000
		Significance (2-tailed)	.000	.000	.
		Df	88	88	0
ICT	Information Resource Management	Correlation	1.000	.774	
		Significance (2-tailed)	.	.000	
		Df	0	87	
	Organizational Agility	Correlation	.774	1.000	
		Significance (2-tailed)	.000	.	
		Df	87	0	

a. Cells contain zero-order (Pearson) correlations.

Source: **SPSS Output 2023**

From a critical look at the zero-partial correlation, we found that the relationship both between information resource management and organizational agility are positively correlated with ICT, as the control variable. Removing the effect of this control variable reduced the correlation between the other two variables to be 0.947 and significant at $\alpha = 0.05$. Since the difference between the zero-order correlation and the controlled correlation $(0.947 - 0.774) = 0.173 > 0.01$; hence from the decision rule, there is a significant difference and thus the null hypothesis is rejected. Therefore, it is concluded that ICT has a significant moderating effect on the relationship between information resource management and agility of telecommunication firms in Rivers State, Nigeria.

DISCUSSION OF FINDINGS

The finding of the study is in support of the work done by Christiansen & Mouritsen (2000) who conducted a study on information resource management: a critical analysis of a new intellectual technology. The main aim of the study was to determine how information systems could have strategic bearing. The population of the study consisted of retail firms in Copenhagen, Denmark. A sample of 155 was chosen from a population of 434 participants who were all contacted through electronic mails. Findings revealed that "in as much as IT becomes strategic, it is necessary to consider how to handle the many interested parties. Thus, it is assumed that IT is strategic, and not that the many interested parties make it strategic. In other words, Earl undermines his own argument that IT is strategic because of the many interested parties. Earl argued that IT represents a demand derived from economic

development and development in the world market structures. Most likely this is true from the point of view that companies today can benefit from using IT in many processes and in many ways. This implies a need for information about development in the IT field, and therefore companies are always scanning the prospects of using IT in their respective productions, etc. But whether this factor will make IT strategic probably depends on the company in question, its situation and the actors' view of the situation. For example, their understanding of the competitive situation and the actual development on the world market. The similarity between this study and our study is the fact that it was carried out on information resource management.

The study found out that there was positive and statistically significant relationship between data resource management and organizational agility of telecommunication firms in Port Harcourt-Rivers State at P value 0.000 which is less than 0.05. The findings of the study concurs with LaValle et al., (2011) who based on the findings from surveys of three thousand business executives from organisations and academic experts located around the world, concludes that the best performing organisations are twice as likely to apply analytics ('using data to enhance business performance') (Deloitte, 2019) to activities. PWC finds that valuations of data-driven firms within the same industry tend to be higher than those of their peers, and furthermore, that companies with data analytics capabilities are twice as likely to end up in the top quartile of performance within their industries (PWC, 2019).

The study found out that there was positive and statistically significant relationship between network resources management and organizational agility of telecommunication firms in Port Harcourt-Rivers State at P value 0.000 which is less than 0.05. The findings of the study is in line with Benzies (2009) who opined that network resources and Information service is to supply its user with all the materials that he or she needs in order to do research, become more educated, empower him/herself, or simply be entertained. The explosion in published output, the sharp increase in bibliographic access of literature through online and off-line databases on CDs decreasing library budgets along with high cost of published output have made it virtually impossible for libraries and documentation/ information centres to fulfil information needs of their primary clientele. Under such squeezing situation the best option left with the libraries is to optimize the output and utilize their resources through extensive sharing and networking. In view of the above, the traditional concept of ownership in collection development is gradually being replaced by access to information and knowledge without regard to location and format.

The study found out that there was positive and statistically significant relationship between software resources management and organizational agility of telecommunication firms in Port Harcourt-Rivers State at P value 0.000 which is less than 0.05. The finding of these study coincide with the statement of Christopher et al. (2000) when he said that Software functionality service quality reflects how well it complies with or conforms to a given design, based on functional requirements or specification. It can also be described as the fitness for purpose of a piece of software or how it compares to competitors in the marketplace as a worthwhile product. Even though the software functionality service is one of the importance attributes towards software quality, there is still lack of review in software functionality service research and practice. In most discussion of software quality, the term of software functionality service is applied almost specifically to the functionality suitability with major focus on functional correctness in performing the tasks it's intended to do for its users. Functionality is one of the attributes for software quality.

The results reveal that information communication technology significantly moderate the relationship between information resource management and organizational agility of telecommunication firms in Port Harcourt-Rivers State. This implies that information communication technology is essentially the core of information resource management. It is also the major determinant of the success or failure of any organization that are ICT based. The rho value result from table 4.23 when information communication technology was moderating the relationship was 0.774, which indicated a very strong positive relationship. This finding agrees with Kent and Facer (2004) who indicated that the workplace is an important environment in which employees participate in a wide range of computer activities, while the home serves as a complementary site for regular engagement in a narrower set of computer activities.

CONCLUSION

The study concludes that information resource management positively enhances organizational agility of telecommunication firms in Port Harcourt-Rivers State. The results highlight the vital role of information resource management in enhancing the overall agility of telecommunication companies in this region. Effective collection, organization, and utilization of information resources have shown to contribute to the firms' ability to adapt swiftly and effectively to dynamic market conditions, customer demands, and technological advancements. Specially, the study concludes that data resources management positively enhances organizational agility of telecommunication firms in Port Harcourt-Rivers State. Also, network resources management positively enhances organizational agility of telecommunication firms in Port Harcourt-Rivers State. Furthermore, software resources management positively enhances organizational agility of telecommunication firms in Port Harcourt-Rivers State. Lastly, information communication technology significantly moderates the relationship between information resource management and organizational agility of telecommunication firms in Port Harcourt-Rivers State. Based on the discussion and conclusion above, the following recommendations are hereby made:

i. Management of telecommunication firms should integrate automation and virtualization technologies in network infrastructure to enable rapid scalability and deployment of new services.

ii. Telecommunication firms should prioritize investment in robust and scalable network infrastructure. Upgrading network equipment and technologies will help ensure efficient data transmission, reduced downtime, and enhanced agility in adapting to changing demands.

iii. Embrace software automation tools and practices to streamline development processes and reduce manual intervention. Automated testing, continuous integration, and deployment pipelines can accelerate software delivery and enhance agility.

iv. Telecommunication firms should prioritize investing in advanced ICT solutions that align with their specific business needs and goals. This includes adopting technologies such as cloud computing, big data analytics, Internet of Things (IoT), and artificial intelligence (AI) to enhance data processing, decision-making, and communication capabilities

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