

## Telecommuting System and its Effect on Employee performance in the Oil and Gas companies in Nigeria

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### **Abstract**

*This study examined the effect of telecommuting systems on employees' performance in the Nigeria oil and gas upstream sector. 69 valid structured questionnaire data was collected among four selected firms' staff randomly, namely, Sepia: Petroleum Development Company; Famfa Oil, Chevron Nigeria Limited and Mobil Producing Nigeria Limited. And the text of hypotheses was based on correlation and multiple regression analysis, while SPSS analytical tools were used to analyzing the data. Findings revealed that the Telecommuting system has an effect on employee's performance. Thus, it concluded that the utilization of information technology, Smartphone usage, flexible work arrangement and digital work environment has an influence on employee performance. The study recommends that employees should be provided with necessary gadgets and be trained on how to use them to boost their performance. Also, only trustworthy and high morale personnel who are willing for telecommuting should be selected; Managers should effectively manage professional and physical Isolation of telecommuters through regular visits to the office and meetings with peers.*

**Keywords:** *Telecommuting System; Information Communication Technology (ICT) Smartphone usage; flexible work arrangement; employee performance*

### **Introduction**

Organizations are seeking ways to make work fun with the aim of ensuring that employees gain job satisfaction and thereby improving their work performance. One way of achieving this is by creating a flexible pattern of work. The advancement of ICT has created such flexibility that enables employees to eliminate the fear of lateness to work, reduce office space, and manage commuting time amongst others. Information and Communication Technology has created a platform through which employees can choose where and when to work and not necessarily to appear at a centralized brick and mortar location called the office.

Working at a distance is a product of information and communication technology brought about by the urgent need to revolutionize organization, thereby bringing enhanced employees efficiency and organizational performance. There are a plethora of benefits both to workers and employers in this type of work arrangement which has necessitated a paradigm shift in the way most organizations now execute their daily business activities. Some of these benefits include the decongestion of traffic, more flexible lifestyle, enhanced time management fewer distractions, reduced office space cost, compliance with environmental regulations, increased outputs, and increased the talent pool. Managers in this type of work arrangement are more result-oriented rather than been activity or effort oriented. As such, telecommuting gives employees the benefit of freedom and control over their work lives.

However, change in management was brought about because telecommuting involves employees who are working outside of the watchful site of their managers (Baruch, 2001). The manager's feeling of loss of control may result in excessive efforts to contact the employee, usually via phone or in person, or monitor the worker's efforts rather than outcomes (Wiesenfeld, Raghuram & Garud, 1999). Computers, Internet connectivity, fax, cellular phones, and advanced communications services such as Integrated Services Digital Network (ISDN) and high-speed dial-up access services have eradicated the physical impediments that formerly required workers to be always in their offices regardless of individual status (Kala & Varadharajan, 2003).

Some of the more familiar enabling technologies include the Internet, electronic mail, voice mail, networks (local, wide-area, and metro-area), scheduling tools, workgroup computing, wireless voice and data, remote access, flexible technology, conferencing, and high-speed telecommunications. Bailey & Kucland (2002)

asserted that an organizational culture that is people-centered, task-oriented, participative, and flexible enough to change would be most conducive for the successful implementation of telecommuting arrangements in yielding high and unique employee performance.

## **Literature Review**

### **Concept of Telecommuting System**

Telecommuting is a work arrangement where employees do not have to travel or commute by bus or car to the central place of work, such as an office building, warehouse or store. It refers more specifically to work undertaken at a location that reduces the commuting time (Hill, Miller, Weiner & Colihan, 1998). Telecommuting is the process of commuting to work through communication links rather than through one's physical presence. Teleworkers often use mobile telecommunication technology such as WI-FI-equipped laptop or tablet computers and smartphones to work from decentralized locations which may be from the employees' home or other remote workplaces which is facilitated through a broadband connection, computer or phone lines, or any other electronic media used to interact and communicate. (Shin, Sheng & Higa, 2000) sees Telecommuting as either working at home, in non-traditional satellite offices, in telecottages, or in neighborhood offices. Teleworking can be seen as the substitution of the trip to and from the workplace either partially or completely for telecommunications technology (Kala & Varadharajan, 2003). Telecommuting requires a transition from the activity and time-based management to project management and result-based evaluations (Grensing-Pophal, 1999; Guirnaracs & Dallow, 1999). Hunton & James (2010) are of the view that the term telecommuting and telework can be substituted one for the other. While the structure of telecommuting or telework varies across companies, most arrangements offer employees the option to perform their work responsibilities from various locations (Hunton & Norman, 2010). telework can be seen to have four-dimensional frameworks namely; Work location -that can be anywhere outside the centralized organizational workplace, Use of ICT- as technical support for telecommuting, Time distribution-referring to the amount of time replaced in the traditional workplace and Diversity of employment- the relationships/ interaction that exist between employers and employees, ranging from contract work to traditional full time employment. (Garrett & Danziger, 2010).

Indeed, recent advancement in information and communication technologies, e.g., high-speed Internet access, IP telephone, e-mail, instant messaging, as suggested by a number of studies, redesigning work policies, such as telecommuting, can positively affect work-life balance of white-collar workers (Almer & Kaplan, 2002; Himmelspach, 2008;), as well as workers in the various levels of an organization.

### **Utilization of Information Technology (IT)**

Information technology (IT) presents a leading standpoint for enhancing any nation's economic competitiveness. It is widely agreed that IT has a considerably beneficial influence on firms' productivity which can only be achieved if the same is well understood and adopted. The increasing dependence on the use of technology within industries has resulted into a considerable improvement in the day to day employees' performance and therefore the consideration of telecommuting has now become a critical element in the present day companies' initiatives (Buhalis, Leung & Law, 2011; Cho, 2006). Berndt & Morrison, (2008) Information Technology influences internal control (that is, the environment, risk, activities, information, communication and monitoring) and it provides guidelines and best practices that can be used in assessing methods obtainable in enabling the effective performance of workers.

### **Smartphone Usage**

Phones support the current reality of informal information systems, they can help extend social and business networks, and they undoubtedly substitute for journeys and, in some instances, for brokers, traders and other business negotiators (Donner, 2005; Hughes & Lonie, 2007). Phones also meet the priority of the Information needs of this group of communication rather than processing of information (Duncombe & flecks, 2006). Also, they have a direct basic task of running a business reducing costs, increasing income, managing risk and link

them to core functions of intermediate communication technologies, particularly the substitution for journeys. As has been demonstrated, the key is enhanced productivity (Saunders, Warford, & Wellenius, 1994). Text messaging is not only for personal use. A survey done by Harris Interactive found that 42% of 18-to-24-year-olds and 33% of 35-to-44-year-olds are “at least somewhat interested in receiving opt-in mobile alerts from their favorite businesses” (Rowe, 2009).

### **Flexible Work Arrangements**

Flexible time allows employees to determine (or be involved in determining) the start and end times of their working day, provided a certain number of hours is worked. This can allow them to meet family or personal engagements/emergencies (enable employees to respond to both expected and unexpected circumstances), during day time or to reduce their commuting time by starting and ending work before or after the rush hour (Sloan, Codruta & Patricia, 2010). Working time has a significant effect; even where other job quality features are considered in multivariate models (**Pagan & Waithery, 2011**). The new working system share three common characteristics: Firstly, it gives employees more freedom in deciding when they work, thus the timing of work has become more flexible (**Houtkarnp & Knotter, 2010**). Secondly, it is up to an employee’s discretion to choose the place for work, be it at home, on the go, in the office, or elsewhere (Kelliher & Anderson, 2008). Thirdly, the new working system has enabled through new media technology, facilitating easier communication (Baarne, et al. 2010).

### **Digital Work Environment**

The use of technology at work becomes more popular every day. “In fact, sonic mobile phone users regard their handsets as a part o-f their physical selves” (Campbell & Russo, 2003). Basically, this is because employees usually welcome technology considering the fact that it gives them the flexibility to work from home if they choose. Technology is often used in organizations in a bid to helping workers crackdown challenges and has easier access to information. It has also been presented to assist the performance of workers since they can easily communicate with colleagues from anywhere (Day, Paquet, Scott, & Hambley, 2012).

### **Employees’ Performance**

Employee performance is a measure of outcomes against the standard. According to **Armstrong (2000)**, also, it can be seen as employees’ behavioural tendencies towards goal attainment. **Armstrong and Baron (2005)**, also view employees’ performance as being about the encouragement of employees’ productive discretionary behaviour with the objective of achieving a human capital advantage. They persistently hold the belief that people are the most in the source of competitive advantage and recognize that, as opposed to other competitive advantages resulting from improving factors such as design or process, the human factor is very difficult to reproduce making it the most valuable in organizations. Every manager, irrespective of his or her role are aware that exceptional employee performance is key in today’s world (**Ripley, 2008**).

Managers who are effective at employees’ engagement have workers who are more likely to remain with the organization, more satisfied, more committed to the organization, and more productive. Organization can be more productive by hiring Managers who are highly skilled in creating enabling work environments that will challenge workers to increase discretionary efforts, more commitment that, in turn, can increase the number of hours and effort employees commit to the job.

### **Empirical Review**

Between November 1995 and October 1996, the Minnesota Department of Administration (1997), ran as a pilot telecommuting program. Participants included employees from various positions including accounting staff, management analysts, word processors, managers, and more. It was found that telecommuting was a successful concept with advantages for employers, employees, and society at large. They discovered, similar to other programs studied, an increase in employees’ satisfaction and productivity. They also concluded that

“organizations that have embraced telecommuting report reduced sick leave usage, reduced real estate and property management costs, and increased employees’ satisfaction and retention.”

An IBM survey of employees revealed that 87 percent of telecommuters believed their productivity and effectiveness had increased. Similar results were gathered from AT&T and American Express. According to Chadderdon (1998), Merrill Lynch employs about 400 telecommuters. Management insists that telecommuters complete a rigorous training program in order to educate employees on the “how-to” of telecommuting. In return, management had reported enhanced productivity and decreased turnover among telecommuters.

In May 2008, a survey was conducted in Hungary. The population was evaluated using a simple random sample of about 50 people on the minimum, according to the data of the 1-hungarian Central Statistical Office, a screening questionnaire was used in recording the data to make sure that only companies that meet the research condition were included. The screening question was, whether they are using telework presently or they are planning to introduce it. The same questionnaire was adopted in establishing the major reasons why companies that exclude telework are doing so. The percentage of organizations employing over 250 people made up about one third of the sample (32%), while organizations employing between 50 and 249 employees totaled 68% of the population. Although most of the respondents were HR or personnel managers, it was the financial directors that responded to our questions at one-fourth of all companies.

Similarly, Guimaraes and Dallow carried out a study in 1999, of 316 telecommuting employees across 18 companies. They discovered that in general, employees perceived their supervisors to be results-oriented rather than activity or effort oriented, and to have a positive attitude about telecommuting.

In 2010, Opara, Olotu, & Maclayton, studied the impact of telecommuting on relationship marketing orientation (RMO) and business performance (BP) of Nigerian banks using quantitative and qualitative data generated from 123 different bank branches in Port Harcourt, with 565 targeted respondents. Multiple regression models were employed in analyzing the data, and the information revealed that technology exists as a moderating variable in the RMO BP relationships of the Nigerian banks. The study also recommended that banks should be technology compliant so as to have high performance and lasting customer relationships.

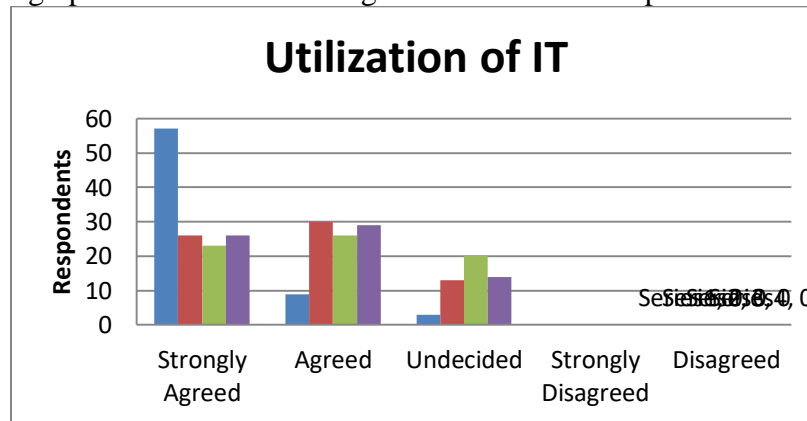


Figure 1

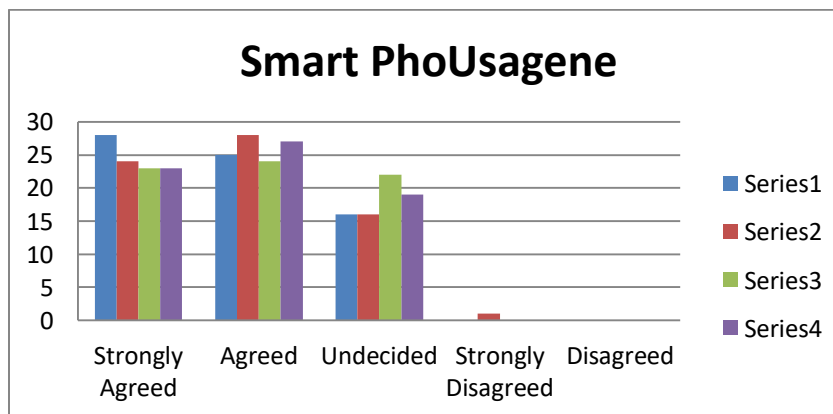


Figure 2

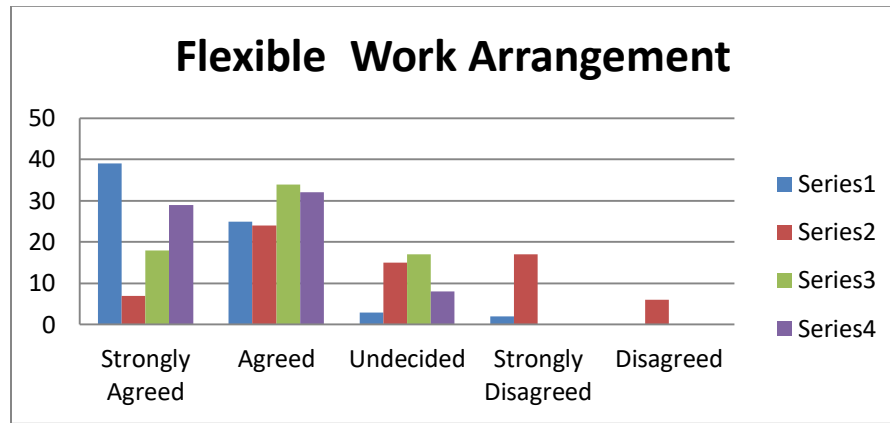


Figure 3

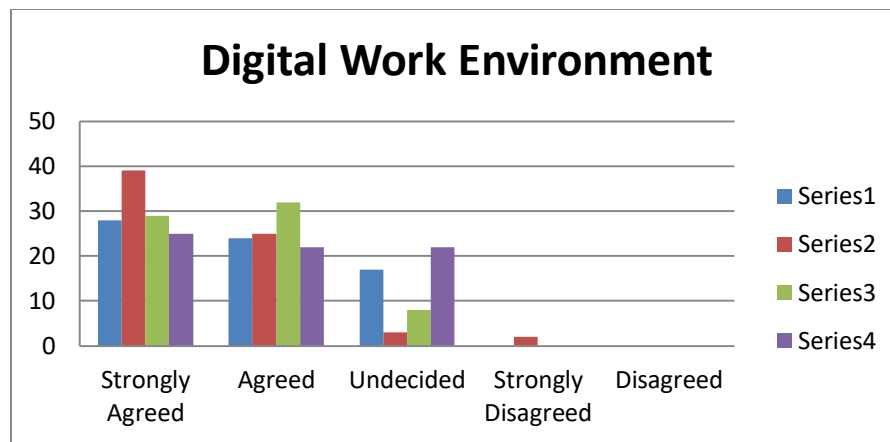


Fig 4

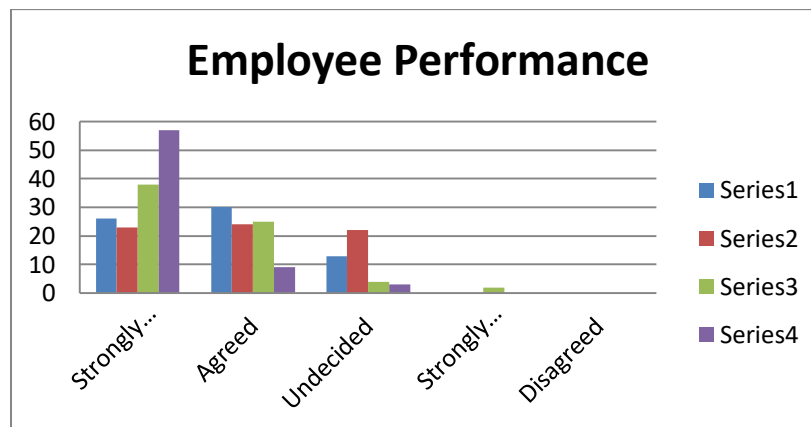


Figure 5

**Research Hypotheses**

H0<sub>1</sub>: There is no positive statistical relationship between the utilization of information technology and employee performance

H0<sub>2</sub>: There is no positive statistical relationship between Smartphone usage and employee performance

H0<sub>3</sub>: There is no positive statistical relationship between flexible work arrangement and employee’s performance

H0<sub>3</sub>: There is no positive statistical relationship between dig work environment and employee’s performance

**Findings**

The research questions formulated for the study were analyzed using table, frequencies and percentages, while correlation analysis via SPSS 23 pack was used to test for the hypothesis. The questionnaire was administered to 120 copies of questionnaire were administered among four selected firms’ staff randomly, namely; Sepia (Petroleum Development Compnay), Famfa Oil, Chevron Nigeria Limited and Mobile Producing Nigeria Limited in South-South, Nigeria, but 69 valid questionnaires were used for hypotheses raised. The respondent's descriptive bar chart in figure 1 below shows that 47.8% strongly agreed to the questions under the utilization of IT, 34.1% agreed, 18.1% were undecided while 0% disagreed and strongly disagreed. 37.7% of respondents strongly agreed to questions raised on Smart Phone Usage, 37.7% agreed, 26.4% were undecided while 0.4% disagreed in figure 2. Also, 33.7% strongly agreed to the questions raised on Digital work environment, 41.7% agreed, 15.6% were undecided, 6.9% disagreed while 2.1% strongly disagreed in figure 3. 52.1% of respondents strongly agreed to questions raised on Flexible Work arrangement, 31.9% agreed, 15.2% undecided, 0.7% disagreed while 0% strongly disagreed as shown in Figure 4. Also, 43.8% strongly agreed, 37.3% agreed, 18.1% were undecided, 0.72% disagreed while 0% strongly disagreed on the questions raised as shown in figure 5

**Table 1 Correlations**

	Variables		Mean	Std. Deviation	1	2	3	4	5	
1	Information Technology	Pearson Correlation	17.188	2.0020	1					
		Sig. (2-tailed)								
		N			69					
2	Smart Phone Usage	Pearson Correlation	16.333	1.7629	.290*	1				
		Sig. (2-tailed)			.016					
		N			69	69				
3	Flexible Work Arrangement	Pearson Correlation	15.913	1.9459	.453**	.176	1			
		Sig. (2-tailed)			.000	.149				
		N			69	69	69			
4	Digital Work environment	Pearson Correlation	16.971	2.0434	.641**	.313**	.658**	1		
		Sig. (2-tailed)			.000	.009	.000			
		N			69	69	69	69		
5	Employee performance	Pearson Correlation	17.420	1.7185	.686**	.312**	.605**	.594**	1	
		Sig. (2-tailed)			.000	.009	.000	.000		
		N			69	69	69	69	69	

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

Table 1 shows the descriptive statistics and inter-correlations for study variables. The utilization of information technology shows a positive correlation coefficient with employee performance (0.686\*\*) which means that the utilization of information technology is a very good measure of the telecommuting system. Smartphone usage shows a positive correlation coefficient with employee performance (0.312\*\*) which implies that smartphone usage is a very good measure of a telecommuting system. Flexible Work arrangement as well shows a positive correlation coefficient with employee performance (0.605\*\*) which implies that it is a very good measure of telecommuting system. Lastly, the Digital Wok environment shows a positive correlation coefficient with employee performance (0.594\*\*) which implies that it’s a very good measure of job creation. And that variable considered is of a positive relationship with employee performance. Therefore, from the study, all the null hypothesis raised was rejected while the alternate is accepted.

**Table 2 Regression Analysis of Telecommuting and Employee Performance**

**Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.768 <sup>a</sup>	.590	.564	1.1345

a. Predictors: (Constant), utilization of information technology, smartphone usage, flexible work arrangement, digital work environment

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	118.436	4	29.609	23.004	.000 <sup>b</sup>
	Residual	82.376	64	1.287		
	Total	200.812	68			

a. Dependent Variable: CONSTANT

b. Predictors: (Constant), utilization of information technology, smartphone usage, flexible work arrangement, digital work environment

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.383	1.654		2.045	.045
	Utilization of information Technology	.415	.090	.483	4.591	.000
	Smart Phone usage	.101	.083	.104	1.222	.026
	Flexible work arrangement	.314	.094	.356	3.339	.001
	Digital work environment	.015	.106	.017	.139	.890

a. Dependent Variable: CONSTANT

From the model summary in table 2 above, the correlation coefficient R is 0.768. Therefore, we can conclude that the telecommuting system has a statistically positive correlation with Employee performance. While the R<sup>2</sup> of 0.59, which means about 59% of the variance in employee performance is explained by the telecommuting system. Also, from the ANOVA table 2, since the p-value is 0.000, which is less than 0.05 at 5% level of significance (P<0.05), which means it is statistically significant. We, therefore, reject the entire null hypothesis and accept the alternate, and conclude that Telecommuting System will significantly impact employee performance when considering the various variables such as; Utilization of information technology (P-critical 0.000 < P-Tab 0.05), SmartPhone usage (P-critical 0.026 < p-Tab 0.05), Flexible work arrangement (P-crit. 0.001 < P.Tab 0.5) and digital work environment (P-critical 0.890 < p-Tab 0.05). The coefficient table 2 above revealed a constant value of 3.383, which is the part of employee performance that does not depend on the telecommuting system. The model shows that 1% improvement on the level of Telecommuting will impact an increase in employee performance by IT (0.415 β), SmartPhone usage (0.101 β), Flexible work arrangement (.314 β) and digital work environment (0.15 β) respectively.

**Conclusion and recommendation**

In line with the findings of this study, the following conclusions were reached. Within a corporate business environment of intense competition, utilization of IT can provide the belief that it might be crucial to a constant competitive advantage and a potent defensive mechanism for an organization. Smartphone usage has enabled people to remain connected and accessible when required and has created new dimensions for business. Also, flexible work arrangement gives employees more freedom in deciding when they work; it has given employees the discretion to choose the place for work, be it at home, on the go, in the office or somewhere else and has created new ways of working. A digital work environment helps employees solve problems and have easier access to information through organizational use of modern information and communication technology. The

study therefore recommends that employees should be provided with necessary gadgets and be trained on how to use them to boost performance. Also, managers should effectively manage professional and physical isolation of telecommuter's through regular visits to the office and meetings with peers.

### **Contributions of the study**

1. The study established that a telecommuting system enhances employees' performance through organizational use of modern information and communication technology.
2. The study provided a dimension of telecommuting system and employees' performance in the Nigerian oil and gas upstream sector
3. The study established an improved model of telecommuting system through four dimensions (utilization of information technology, Smartphone usage, flexible work arrangements and digital work environment)
4. The study revealed the benefit of adopting telecommuting system in order to enhance employees' performance in the oil and gas sectors in Nigeria

### **References**

- i. Almer, ED. & Kaplan, SE. (2002). *The effects of flexible work arrangements on stressors, burnout, and behavioral job outcomes in public accounting. Behavioral Research in Accounting, Vol. 14, pp. 1-34.*
- ii. Baarne, R., Houtkamp, P., & Knotter, M. (2010). *Het nieuwe werken ontrafeld [ Unravelling new ways of working]. Assen, The Netherlands: Koninklijke Van Gorcum/Stichting Management Studies.*
- iii. Baruch, Y. (2001). *The status of research on teleworking and an agenda for future research. International Journal of Management Reviews, 3(2) 113-430.*
- iv. Berndt, Ernst R. and Morrison, Catherine J. (2008), *High-tech Capital Formation and Economic Performance in U.S. Banking Industries: An Exploratory Analysis', Journal of Econometrics, Vol. 106, No .2 pp 22-34.*
- v. Campbell, S. W., & Russo, T. C. (2003). *The social construction of mobile technology: An application of the social influence model to perceptions and uses of mobile phones within personal communication networks. Communication Monographs, 70(4), 317-334.*
- vi. Day, A., Paquet, S., Scott, N., & Hambley, L. (2012). *Perceived information and communication technology (ICT) demands on employee outcomes: The moderating effect of organizational ICT support. Journal of Occupational Health Psychology, 17(4), 473-491.*
- vii. Donner, J. (2005). *Research Approaches to Mobile Phone Use in Develop big world: A Review of literature. The Information Society, 24, 140*
- viii. Duncombe, R. and Heeks, R. (2006). *Information and communication technologies and small enterprise in Africa: Findings from Botswana. Institute for Development Policy and Management, University of Manchester.*
- ix. Garrett, R. IC. and Danziger, SN. (2010). *"Which Telework? Defining and testing a taxonomy of technology mediated-work at a distance.*
- x. Grensing-Pophal, L. (1999). *Training Supervisors to Manage Teleworkers, HumanResources Magazine, January, 67-72.*
- xi. Guirnaraes, T.& Dallow, P. (1999). *Empirically Testing the Benefits, Problems, and Success Factors -for Telecommuting Programs, European Journal of InformationSystems, 8, 40-54.*
- xii. Hill, J. B., Miller, B.C., Weiner, S.P., & Colihan, J. (1998). *Influences of the virtual office on aspect of work and work balance. Personnel psychology, 51, 667-683.*
- xiii. Himmelspach, I, (2008) *Telecommuting: Boon or bane? Grand Rapids Business Journal 26, 35: 6-7.*
- xiv. Hughes, N. & Lonie, S. (2007). *M-PESA: Mobile Money for the Unbanked.*
- xv. Kala S .S & Varadharajan S (2003) *The Effect of Telecommuting o Suburbanization:*



- xvi. Kelliher, C., & Anderson, D. (2008). *For better or for worse? Analysis of how flexible working practices influence employees perceptions of job quality. The International Journal of Humnan Resource Management, 19,419-431.*
- xvii. Kurland, N. B. & Bailey, D. E. (1999). *Telework: The advantages and challenges of working here, there, anywhere, and anytime. Organizational Dynamics, 28(2), 53-68.*
- xviii. Rowe, M(2009) "Beat the Recession Blues," *Restaurant 1-lospitality, Volume 93, Number 12, pp. 26-30.*
- xix. Saunders, R., Warford, J. & Wellenius, B. (1994). *Telecommunications and economic development. 2<sup>nd</sup> edition. Baltimore, MD: Johns Hopkins University Press.*
- xx. Shin, B., O. Sheng & K. Higa. 2000. "Telework: Existing Research and Future Directions." *Journal of Organizational Computing and Electronic Commerce. 10(2), 85-101.*
- xxi. Sloan, A. F. (2010). *Public Policy Platform on Flexible Work Arrangements. Public policy initiative at Georgetown Law, Available at: <http://workplaceflexibility2010.org/images/uploads/report-1.pdf>.*
- xxii. Wiesenfeld, B. M., Raghuram, S. & Garud, R. (1999). *Managers in a virtual context: The experience of self-threat and its effects on virtual work organizations. In C. L. Cooper & D. M. Rousseau (Eds.), Trends in Organizational Behavior. (pp. 31-44). Chichester: John Wiley & Sons, Ltd.*