



# INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES



## The Effect of Automation and Workload on Staff Productivity in under Developing Country in Guinea: A Conceptual Study

Adama Camara, Mohamad Zulkifli Bin Abdul Rahim, Yusnita Binti Yusof, Abdul Malek Bin A Tambi, Sekou Marouf Magassouba

To Link this Article: <http://dx.doi.org/10.6007/IJARBSS/v9-i3/5755>

DOI: 10.6007/IJARBSS/v9-i3/5755

**Received:** 02 Feb 2019, **Revised:** 17 Feb 2019, **Accepted:** 30 Feb 2019

**Published Online:** 03 March 2019

**In-Text Citation:** (Camara, Rahim, Yusof, Tambi, & Magassouba, 2019)

**To Cite this Article:** Camara, A., Rahim, M. Z. B. A., Yusof, Y. B., Tambi, A. M. B. A., & Magassouba, S. M. (2019). The Effect of Automation and Workload on Staff Productivity in under Developing Country in Guinea: A Conceptual Study. *International Journal of Academic Research in Business and Social Sciences*, 9(3), 902–914.

**Copyright:** © 2019 The Author(s)

Published by Human Resource Management Academic Research Society ([www.hrmars.com](http://www.hrmars.com))

This article is published under the Creative Commons Attribution (CC BY 4.0) license. Anyone may reproduce, distribute, translate and create derivative works of this article (for both commercial and non-commercial purposes), subject to full attribution to the original publication and authors. The full terms of this license may be seen at: <http://creativecommons.org/licences/by/4.0/legalcode>

**Vol. 9, No. 3, 2019, Pg. 924 - 936**

<http://hrmars.com/index.php/pages/detail/IJARBSS>

**JOURNAL HOMEPAGE**

Full Terms & Conditions of access and use can be found at  
<http://hrmars.com/index.php/pages/detail/publication-ethics>



# INTERNATIONAL JOURNAL OF ACADEMIC RESEARCH IN BUSINESS & SOCIAL SCIENCES



## The Effect of Automation and Workload on Staff Productivity in under Developing Country in Guinea: A Conceptual Study

Adama Camara, Mohamad Zulkifli Bin Abdul Rahim, Yusnita Binti Yusof, Abdul Malek Bin A Tambi, Sekou Marouf Magassouba  
Universiti Sultan Zainal Abidin

### Abstract

It was figured out that automation greatly enhances the productivity of employees along with time saving. It greatly affects the workload on employees and ensures control over mistakes and frauds and eventually enhances productivity. It is assumed that in corporate sector, workers have high workload therefore further raise in the level of workload creates low productivity. However, in the banking sector, based on the concept of profit maximisation, management assign excessive workload to their employees, consequently, the employees work under stress, the situation that result in low productivity of the workers. Therefore, the current paper proposed the influence of Automated Teller Machine (ATM), internet banking, mobile banking influences and workload on banks workers' productivity in Guinea.

**Keywords:** Automation, workload, productivity, Mobile Banking, Guinea- N'Zerekore

### Introduction

Banking business encompasses numerous activities centred around the movement and collection of funds either physically or electronically (Mattila & Hanin, 2015). The definition of banking by Webster is "the business of establishing a common fund for lending". As the result of automation, about 90% of the business conducted today is being carried out through online platforms (Ojeka, & Ikpefan, 2012). The banking industry is undergoing a lot of changes brought about by the advent of automation. Groover, (2007) defines automation as the technology through which a procedure or process is executed without the intervention of human.

There are various factors in working place that has placed negative effect on performance of job and employees' health. These negative factors and conditions should minimize individual stress and exposure of heavy workload. In other words, we find that when the level of workload increases, workers systematically select easier tasks over difficult tasks. This is important since we know that

how employees' manage and process their workload can have significant implications for the productivity of workers in the modern workplace (Diwas, Staats, Kouchaki, & Gino, 2017). Employees are likely to be circulated more thinly during the high workload periods; as a result, employees may not have the extra cognitive resources needed to undertake additional complex tasks.

The Guinean banking system had witnessed different forms of electronic means of handling operations as more sophisticated ones are continually invented and employed. Some of the major available automated devices presently being used in Guinea are Automatic teller Machine (ATM), internet banking and mobile banking where they provide real time banking services to customers. It becomes necessary for the Guinean banks to fully automate their services due to daily increase in number of customers, changes in customer demands as well as technological innovations where they transformed the face of banking and resulted to the disappearance of traditional banking system. The technologies reduce the turnaround time in processing customers' requests and bring about specialization of staff in the banking sector in Guinea. Virtually all Guinean banks have improved services to their customers and also improve the working efficiency of their staff through the adoption of automation which are sequencing greater returns out of their branches (Orator, 2000). Some banks in Guinea have added new product and services to their traditional offering; hence facilities such as smart card, intranet, and internet are among the various forms of automated delivery channels that have tremendously enhanced the efficiency of service delivery by banking industry. The most successful financial service firm is the one which is eager to see the world through the eyes of her customer their edge will come from investing in technology which can generate accurate picture of individual customers.

### **Literature Review**

In previous section, the study was able to highlight the concept of automation alongside workload and how it has paved way for worker productivity in organizations. Moreover, the paper will be attempting to explain the concept of automation and workload and to explain how automation and workload affect worker productivity in banking sector.

The constructs of this study consist of Automated Teller Machine (ATM), internet banking, mobile banking, workload and workers' productivity. This following section presents the overview of the variables.

### **Productivity**

According to Bharathi & Gupta (2017) the simple, classic view of productivity is concerned with measuring inputs in relation to outputs. It can be calculated as the amount of output generated in a given amount of time. A simple productivity equation can be seen as "Outputs provided by the process divided by Inputs consumed by the process". The broadest approach to measuring productivity includes all the aspects that can influence productivity such as the quality of output, work disruptions i.e. (workload), absenteeism, turnover, and customer satisfaction. Due to the range of factors involved, productivity can be defined and measured differently depending upon the role, organization or sector.

### **The Automated Teller Machine (ATM)**

ATM is an electronic telecommunication machine that allows financial institutions' customers to conduct financial transactions, like cash withdrawals, deposits, transfer of funds, or access account information, at any point of time without having to interact with bank employees. In the modern ATMs, the machine is programmed to identify customers inserting their ATM cards (including any other acceptable settlement card) into the machine, followed by entering a PIN that must tally the PIN stored in the chip of the inserted card (Bik, Maritz, Luong, Shin, Dominguez-Bello, & Carlton, 2016). The card allows banks customers to have access to their funds and other accounts they possess to conduct a variety of financial transactions. ATM as one of the IT technologies plays a wonderful role in the growth of financial institutions like banks. The ATM provides 24 hours access to speed transaction. ATM provides flexible payment option and more convenient access to client accounts (Williams & Hutchison, 2000).

### **Services Provided by ATM**

The advent of the ATM has enabled financial institutions provide their customers with a wide variety of banking services 24 hours a day, seven days a week without significant increase in personnel. When ATM is utilized to its full capacity, the most common service that ATM provides is the withdrawal from checking or pass book accounts. The same result was founded by the survey of banks conducted by the office of the controller of currency as early as 1975.

### **Benefit of ATM to Financial Institutions**

ATMs are a one-time asset for banks. If the machines are placed in strategic locations, they help customers dramatically by reducing congestion in the banking halls that helps branch staff focus on their core areas (Toffler, 2013). It provides more convenient access to customers as ATM provides 24 hours access for clients who may wish to withdraw, deposit, transfer fund and also inquire about their account information. ATM saves money for banks since the cost of using ATM to process deposit and withdrawals was found to be less expensive than that of human teller in terms of training and manpower development (Das, & Debbarma, 2011). However, the essence depends on how the ATM is placed. So, no more long queues in the cash counter to withdraw. ATMs also reduce transaction costs, which eventually increases profits of the banks since a typical ATM transactions are fraction of the cost of teller transactions. It also helps banks save time for banking services to their customers. ATMs can be placed anywhere because they can be connected to satellite communications (Toffler, 2013).

### **Internet Banking**

Electronic Banking System like ATM, PayDirect, mobile phone banking, Debit/Visa Card payment and electronic check payment has a great impact on bank performance because they increase profitability, improves bank management quality, increase bank asset and promotes bank growth and expansion (Ngango, Mbabazize & Shukla 2015). According to Worku, Tilahun, & Tafa (2016), e-banking in a nut-shell has impact in improving customer satisfaction, impact in reducing waiting time for customers to get bank service and impact in improving customers to control their account movements.

Internet is the network of computers within an organization. Internet allows communication between departments and regional branches of the same organization. The intranet offers banks the opportunity to manage client account through instantaneous accounts. Intranet also allows the bank to offer online banking services by allowing clients to transact business irrespective of the branch. Clients can make the same transactions as with phone banking (checking their account balance, making transfers, learning about products and finding the nearest location and its office hours) on the internet (Slavin & Schoech, 2017; VonDerheide & Dhamodharan, 2017). Internet banking refers to a system that enables customers to access accounts and general products and services through a personal computer (Oluyemi 2002).

As the total need for information technology grows, the internet facilitates easy communication around the world, which in turn transforms the global economy into more information intensive. However, popularity in the new network economy is also of concern to governments because it facilitates the free flow of information (Al-Ajam, & Nor, 2015). The internet banking also its users to save time and costs as well as facilitating information exchange between the banks and their customers. It accessibility of banking services since the internet banking is available 24 hours a day and 7 days a week including holidays. It takes services to the door steps of customers as it allows client to review, print personal bank statement, conduct interbank, inter account and inter country fund transfer (Meuter, Ostrom, Roundtree & Bitner, 2000).

### **Mobile Banking**

Mobile banking is one of the latest technologies in the series of the modern technological. Although ATMs, telephones and online banking provide effective delivery channels for banking services, but as a more recent channel established by retail and microfinance banks in many developed and developing countries, they are likely to have a significant impact on the market. The expansion of the use of smartphones has increased the demand for mobile banking services, prompting many banks and other financial institutions to adopt this innovative service with new sets of products and applications designed to expand the volume of their customers. Many studies have related mobile banking and associated it with customers' attraction and retention (Shaikh & Karjaluo, 2015). The introduction of mobile banking has positively touched the lives of common people more than so many other technologies. Its adoption has provided diverse opportunities for all groups of individuals and businesses Agwu & Carter, 2018).

Through mobile banking, banks customers can access banking services such as account management, statement or balance inquiry, funds transfer and settlement of bill. In comparism to the internet banking, mobile banking is free of time and space constraints. Users can get real-time account information in a more portable device and make payments anytime, anywhere. This allows banks improve the quality of their services and reduce service costs (Zhou, Lu, & Wang, 2010). In line with the trend, banks in Guinea have developed mobile banking services and tried to market them to mobile phone users.

### **Workload**

Workload is the overall energy output of a system, predominantly of a person performing strenuous task overtime (Memarian, & Mitropoulos, 2016). Workload can be characterized as a mental



construct that reflects the mental strain resulting from performing a task under specific environmental and operational conditions, coupled with the capability of the operator to respond to those demands. Workload is not only task specific, but also person specific. It involves individual capacities and motivation to perform a task (Omelayo & Omole 2013). Mental workload is the portion of operator information processing capacity or resources that is actually required to meet system demands. It is a demand placed upon humans. Mental workload is the difference between the capacities of the information processing system that are required for task performance to satisfy performance expectations and the capacity available at any given time (Backs & Ryan, 1992).

According to Andre (2001) workload is defined as a hypothetical construct that represents the cost incurred by an employee (human operator) to achieve a particular level of performance. According to Kahneman (1973) and Wollesen, Scrivener, Soles, Billy, Leung, Martin, & Dean, (2018) considered workload to be a primary source of resource depletion and defined it as the proportion of the capacity a worker spends on tasks performance. Kantowitz & Simsek, (2001) and Domenichini, Torre, Branzi, & Nocentini, (2017) defined it as an intervening variable that modulates the tuning between the demands of the environment and the capabilities of the organism. In summary, the term workload generally refers to the quantity of physical and cognitive work that workers can perform without endangering their own health and safety or that of others, yet still remain efficient (Bouzit, Négroni, & Vion, 2002).

Employees' actual work is not limited solely to the number of files or calls they handle: the interactive dimension must also be factored in when identifying the characteristics of their workload. Concurrently with this on-going negotiation process, workers are required to perform a number of tasks simultaneously (multi-task) within a limited time frame (Bouzit, et al., 2002; Du, 2018). Workers may be exposed to information and communication overload, given that they have to grasp and assimilate information from different sources in order to answer customers' questions accurately (Dubois & Bobillier-Chaumon, 2007). Yet employees are increasingly faced with work situations where their flexibility is considerably reduced (Bouzit et al., 2002). Under these circumstances, —for reasons of economic efficiency, there is a tendency to transfer work, regardless of its purpose, from humans to specialized automatons (machines), which have a higher output than humans in specific repetitive tasks|| (Lahlou, 2002). This Automation of work gives rise to a certain repetitiveness in the tasks to be performed, leaving workers little decision latitude in performing their tasks (Bakker, Demerouti, & Euwema, 2005; Bakker, Demerouti, & Schaufeli, 2003). Also, employees are left with the impression that they are underusing their skills and capacities because their role is dictated by a machine (Bakker, et al., 2005; Bakker, et al., 2003).

Moreover, workers are subject to quantitative controls pertaining mainly to the number and length of calls made and to break times (Hechiche-Salah et al., 2009). Qualitative controls are also applied, and involve compliance with set standards regarding the quality of service to be provided to customers (Hechiche-Salah et al., 2009). First, this control threatens workers' autonomy on various levels (Van de Weerd, 2009). Second, the requirement of offering quality service while having to work within a limited time frame can create a role conflict and a source of stress for workers (Brun, Biron, & St-Hilaire, 2009). It may even become impossible for them to meet these sometimes-contradictory expectations, forcing them to choose between quality and productivity (Di Ruzza & Franciosi, 2003; Omelayo & Omole 2013).

Diwas et al. (2017) cited that workers' discretion (workload examples) has a meaningful effect on operational outcomes. As, Ibañez, Clark, Huckman & Staats (2017) discovers that radiologists are expected to reorganize their queue of work to frequently choose the shortest and the easiest task in their queue or to opt for a task that is related to the previously completed duty but in such doing they implicitly slowdown their performance. Workload is one of factors that put forth unnecessary pressure on employees which culminate as stress. According to Bature, Aminu, & Ozigbo (2013) Stress occurs as a result of dealing with something that lays extraordinary or unusual demands on us. Such things as too much workload, working relationship or poor understanding with superiors, working late with little or no time to rest, and so on place special demands on employees and serve as threats to the health.

### **The Relationship between Constructs of the Study**

#### **ATM and Worker's Productivity**

When ATM was first introduced, it was meant to reduce the excessive traffic in the banking hall, make customers have a quick access to their money and make life convenient to a certain level. According to past researchers, Ayo, Adewoye & Oni (2010) spelled out that the situation today has changed drastically; it has become a source of worry to users and providers (banks). The impact of ATM services in terms of availability of money is positive but insignificant (Lasisi & Abubakar 2014). In the contrary, (Mutuku & Nyaribo 2015) discovered in their research that ATMs use had a positive and significant effect on employee productivity of the banks.

Ngango, Mbabazize & Shukla (2015) suggested that ATM should be put in different locations easily accessible by customers, so that quick service and convenience is maintained hence improving bank operations. At the same time constantly serviced should be ensured in order to provide reliability of the services.

Hence, based on suggestions and the convincing results accomplished in previous research works a positive result is expected between ATM and Employees' productivity; and so the First Hypothesis is proposed as follow:

**H1:** *There is a positive relationship between Automated Teller Machine (ATM) and banks workers' productivity in Guinea.*

#### **Relationship between Internet Banking, Mobile banking and Workers' Productivity**

Since Mobile Banking has been introduction in mid-2005, the adoption of internet banking has been slow due to impaired unavailability of infrastructure and lack of supportive legislation for internet banking (Nyangosi et al 2009). However, according to (Okiro & Ndugu 2013) the adoption of internet banking has enhanced performance of the banking industry due to increased efficiency, effectiveness and productivity. The internet banking variable has had a positive effect on the performance of the banking system. Yet, the results suffer from lack of data. We believe the field is going to benefit from further research on the topic to confirm the findings (Onay, Ozsoz & Helvacioğlu 2008). From these findings of (Kathuo, Rotich & Anyango 2015), they concluded that the financial performance of the banks that provide mobile banking products has improved as they ensure efficiency of the banking services.

The study recommends an in-depth study to be carried out on the challenges faced by commercial banks in adopting mobile banking in the banking industry in Kenya. These may include macroeconomic factors such as political unrest, interest rates, labour unrest and social cultural perspective. MUTUA (2010) however found that a weak but positive relationship exist between mobile banking and the financial performance of commercial banks in Kenya. The study recommends that the policy makers take mobile banking awareness creation into consideration when drafting policies on the operations of banks in Kenya.

Electronic Banking System like ATM, PayDirect, mobile phone banking, Debit/Visa Card payment and electronic check payment has a great impact on bank performance because they increase profitability, improves bank management quality, increase bank asset and promotes bank growth and expansion (Ngango, Mbabazize & Shukla 2015). According to Worku, Tilahun, & Tafa (2016), e-banking in a nut-shell has impact in improving customer satisfaction, impact in reducing waiting time for customers to get bank service and impact in improving customers to control their account movements.

Therefore, a study should be conducted to investigate the impact of mobile and internet banking on Employee's Productivity. And so, the second and third hypothesis is proposed as follow:

**H2:** *There is a positive and significant relationship between internet banking and banks workers' productivity in Guinea.*

**H3:** *There is a positive and significant relationship between Mobile banking and banks workers' productivity in Guinea.*

### **Relationship between Workload and Workers' Productivity**

It was figured out that technology greatly escalates the productivity of employees along with time saving. It greatly affects the workload on employees and ensures control over mistakes and frauds (Abbas, Muzaffar, Mahmood, Raman, & Rizvi, 2014). In spite of this, Omolayo & Omole (2013) studies shows that there is no significant relationship between workload and performance.

To be more specific, because of the large stable amount in job and different in ability of employee, work overload and working relationship may be a hard factor in reduce, but organizations still have some solutions to fight with this issue (Khuong & Yen 2016). It is assumed that in corporate sector, most people have high workload therefore further raise of workload level creates an environment that leads to lower productivity levels (Shah, Jaffari, Aziz, Ejaz, Ul-Haq, & Raza 2011). A study reveals that both the male and female employees are experiencing work-overload in their work place. Irrespective of the age majority of the employees agree that the workload is affecting their job performance (Kotteeswari & Sharief 2014).

In the light of the literature, a negative effect is expected between workload and worker's productivity. Hence, this expectation is captured in the following hypothesis:

**H4:** *There is a negative relationship between workload and banks workers' productivity in Guinea.*



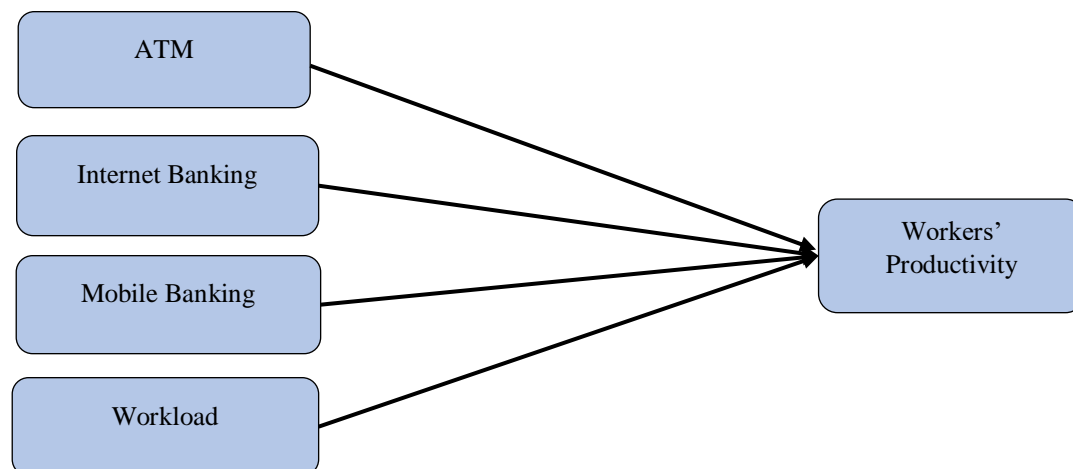


Figure1: Conceptual Framework

### Conclusion

Banks were among the first industries to adopt automation in the globe considering the huge benefits they get from the development. Banks embraced automation to enhance efficiency than the manual banking system which leads to loss of productivity. Also, automation decreases the redundancies in the banking operations and frees up workers that can be assigned to duties that are more productive. The interaction may be related to electronic account related to information or possibly up to date static data and lastly the transactional systems allows customers to execute financial transactions on the bank web transactional web site and they can check their account balances, transfer funds, pay and receipt bills, apply for loan and perform a variety of financial transaction at the comfort of their rooms. Finally, it is most likely that with higher workload level, employees will be more expected to look for means to advance in their work which would make them choose easier tasks that can be completed more quickly.

### Theoretical Contribution

This paper has a significant, value-added contribution to the occupations that can be entirely automated using current technology. In other words, automation is likely to change the vast majority of occupations—at least to some degree—which will necessitate significant job redefinition and a transformation of business processes. As mentioned in this paper, the economic benefits of automation will extend far beyond labour savings when its roles and processes get redefined. Particularly in the highest-paid occupations, machines can augment human capabilities to a high degree, and amplify the value of expertise by increasing an individual's work capacity and freeing the employee to focus on work of higher value that will result in lower level of occupational stress. Furthermore, this paper will benefit future researchers in the finding the catalyser for existing automation system in order to maximize work efficiency, productivity as well as customers' satisfaction. On the other hand, this paper highlighted the development of automation in a third-world country, Guinea, which can be considered as an act of opening door for other researchers to explore and modify the system accordingly to people's lifestyle, their needs and work ethics.

## References

- Abbas, J., Muzaffar, A., Mahmood, H. K., Ramzan, M. A., & Rizvi, S. S. U. H. (2014). Impact of technology on performance of employees (a case study on Allied Bank Ltd, Pakistan). *World Applied Sciences Journal*, 29(2), 271-276.
- Adeniran, L. M. A. R., & Junaidu, A. S. (2014). An Empirical Study of Automated Teller Machine (ATM) and User Satisfaction in Nigeria: A Study of United Bank For Africa in Sokoto Metropolis. *International Journal of Management Technology*, 2 (3), 1-11
- Agwu, E., & Carter, A. L. (2014). Mobile phone banking in Nigeria: benefits, problems and prospects. *International Journal of Business and Commerce*, 3(6), 50-70.
- Agwu, E., Okpara, A., Aigbiremolen, M. O., & Iyoha, F. O. (2014). The Impact of Information Communication Technologies in the Strategic Management of Financial Institutions. *International Review of Management and Business Research*, 3(3).
- Akesinro, S. A., & Adetoso, J. A. (2016). The Effects of Computerized Accounting System on the Performance of Banks in Nigeria. *Journal of Economics and Sustainable Development*, 7(14), 76-82.
- Akinyele, A. I., Ngumi, P. & Muturi, W. (2016). Financial Innovation Adoption and Turnaround Time. *Journal of Research in Economics and International Finance (JREIF)*, 5 (2), 014 - 028.
- Al-Ajam, A. S., & Md Nor, K. (2015). Challenges of adoption of internet banking service in Yemen. *International journal of bank marketing*, 33(2), 178-194.
- Aliyu, A., & Tasmin, R. (2012). The Impact of Information and Communication Technology on Banks" Performance and Customer Service Delivery in the Banking Industry. *International Journal of Latest Trends in Finance & Economic Sciences*.
- Andre, A. D. (2001). *The value of workload in the design and analysis of consumer products*. In P. A. Ayo, C. K., & Adewoye, J. O. (2010). The state of e-banking implementation in Nigeria: A post-consolidation review. *Journal of emerging trends in economics and management sciences*, 1(1), 37-45.
- Bature, N. U., Aminu, A., & Ozigbo, N. (2013). Effects of Work Stress on Employees' Performance in United Bank of Africa Plc. Garki Branch, Abuja, 1-11.
- Bharathi T. & Gupta, K.S. (2017). Job Stress and Productivity: A Conceptual Framework. *International Journal of Emerging Research in Management & Technology*, 6 (8), 393-399.
- Bik, H. M., Maritz, J. M., Luong, A., Shin, H., Dominguez-Bello, M. G., & Carlton, J. M. (2016). Microbial community patterns associated with automated teller machine keypads in New York City. *mSphere*, 1(6), e00226-16.
- Bouzit, N., Négroni, P., & Vion, M. (2002). Overflow (s) to customer reception and health effects. *M. Jourdan & J. Theureau (Eds.), Mental load: fuzzy concept and real problem. Toulouse, France: Octares Editions*.
- Chui, M., Manyika, J., & Miremadi, M. (2015). Four fundamentals of workplace automation. *McKinsey Quarterly*, 29(3), 1-9.
- Dandago, K. I., Farouk, B. K. U., & USMAN, B. K. (2012). Impact of investment in information technology on the return on assets of selected banks in Nigeria. *International Journal of Arts and Commerce*, 1(5), 235-244.

- Das, S., & Debbarma, J. (2011). Designing a biometric strategy (fingerprint) measure for enhancing atm security in indian e-banking system. *International Journal of Information and Communication Technology Research*, 1(5).
- Dauda, Y. A. & Akingbade, W. A. (2011). Technology innovation and Nigeria banks performance: The assessment of employee's and customer's responses. *American Journal of Social and Management Sciences* 2 (3), 329-340.
- DeYoung, R., & Hunter, W. C. (2001). Deregulation, the Internet, and the competitive viability of large banks and community banks.
- Farouk, B. K. U., & Dandago, K. I. (1970). Impact of Investment in Information Technology on Financial Performance of Nigerian Banks: Is There a Productivity Paradox?. *The Journal of Internet Banking and Commerce*, 20(1), 1-22.
- Farouk, M. A., Hassan, S. U., & Mamman, A. (2013). Electronic Banking Products and Performance of Nigerian Listed Deposit Money Banks. *American Journal of Computer Technology and Application*, 1(10).
- Goyit, M. G. (2015). *Service Quality and Financial Performance of Selected Banks in Nigeria (2006-2013)* (Doctoral dissertation, University of Jos).
- Hart, S. G., & Staveland, L. E. (1988). Development of NASA-TLX (Task Load Index): Results of empirical and theoretical research. In *Advances in psychology* (Vol. 52, pp. 139-183). North-Holland.
- Hassan Darwish, N. S., Sahraei, M., Zakrifar, F., & Talebi, S. M. (2014). Effects of Automated Office Systems (Automation) on Improve Decision-Making of Staff Managers (At the Airports Company of Country).
- Ibanez, M. R., Clark, J. R., Huckman, R. S., & Staats, B. R. (2017). Discretionary task ordering: Queue management in radiological services. *Management Science*, 64(9), 4389-4407.
- Kahneman, D. (1973). *Attention and effort* (Vol. 1063). Englewood Cliffs, NJ: Prentice-Hall.
- Kantowitz, B. H., & Simsek, O. (2001). Secondary-task measures of driver workload. *Stress, workload and fatigue*.
- Kathuo, M.S., Rotich, G., & Anyango, W. (2015). Effect of Mobile Banking on the Financial Performance of Banking Institutions in Kenya. *The Strategic Journal of Business & Change Management*, 2 (98), 1440-1457.
- KC, D. S., Staats, B. R., Kouchaki, M., & Gino, F. (2017). Task selection and workload: A focus on completing easy tasks hurts long-term performance.
- Khuong, M.N. & Yen, V.H. (2016). Investigate the Effects of Job Stress on Employee Job Performance — A Case Study at Dong Xuyen Industrial Zone, Vietnam. *International Journal of Trade, Economics and Finance*, 7 (2), 31-31.
- Kotteeswari, M. & Sharief, S.T. (2014). Job Stress and its Impact on Employees' Performance: A Study With Reference to Employees Working in BPOS. *International Journal of Business and Administration Research Review*, 2 (4), 18-25.
- Kwarteng, P.A. (2016). *The Effect of Electronic Banking on Customer Service Delivery in Kumasi Metropolis*. (Master Thesis, Kwame Nkrumah University of Science and Technology, Ghana).
- Manyika, J., Chui, M., Miremadi M., Bughin, J., George, K., Willmott, P. & Dewhurst, M. (2017). A Future That Works: Automation, Employment, and Productivity. Mckinsey Global Institute (Research Insight Impact).

- Mattila, M., & Hanin, A. (2015). The real value of electronic banking. In *Proceedings of the 2000 Academy of Marketing Science (AMS) Annual Conference* (pp. 398-402). Springer, Cham.
- Meihami, B., Varmaghani, Z., & Meihami, H. (2013). The Effect of Using Electronic Banking on Profitability of Bank. *Interdisciplinary Journal of Contemporary Research in Business*, 4 (12), 1299 - 1318.
- Memarian, B., & Mitropoulos, P. (2016). Production practices affecting worker task demands in concrete operations: a case study. *Work*, 53(3), 535-550.
- Metz, B. (2015). *Ex Machina: The Effects of Automation on Employment and Skills*. (Master's Thesis, Leiden University and Netherlands Institute of International Relations 'Clingendael', Netherlands).
- Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: understanding customer satisfaction with technology-based service encounters. *Journal of marketing*, 64(3), 50-64.
- Mutua, R. W. (2013). Effects of mobile banking on the financial performance of commercial banks in Kenya. *Unpublished MBA Thesis, University of Nairobi*.
- Mutuku, M. N., & Nyaribo, W. M. (2015). Effect of Information Technology on Employee Productivity in Selected Banks in Kenya. *Review of Contemporary Business Research* 4 (1), 49-57
- Ngango, A., Mbabazize, M., & Shukla, J. (2015). E-Banking and Performance of Commercial Banks in Rwanda. A Case of Bank of Kigali. *European Journal of Accounting Auditing and Finance Research*, 3(4), 25-57.
- Ngumi, P. M. (2014). *Effect of bank innovations on financial performance of commercial banks in Kenya* (Doctoral dissertation).
- Nnuro, E. K. (2012). *Occupational stress and its effects on job performance: A case of Koforidua Polytechnic* (Doctoral dissertation).
- Nwaolisa, E. F., & Kasie, E. G. (2012). Electronic retail payment systems: User acceptability and payment problems in Nigeria. *Oman Chapter of Arabian Journal of Business and Management Review*, 34(953), 1-18.
- Groover, M. P. (2007). *Fundamentals of modern manufacturing: materials processes, and systems*. John Wiley & Sons.
- Ojeka, S. A., & Ikpefan, O. A. (2012). Electronic commerce, automation and online banking in Nigeria: challenges and benefits. *International Journal of Innovation in the Digital Economy (IJIDE)*, 3(1), 11-26.
- Okiro, K. & Ndugu, J. (2013). The Impact of Mobile and Internet Banking on Performance of Financial Institutions in Kenya. *European Scientific Journal*, (13), 146-161.
- Omolayo B.O. & Omole O.C. (2013). Influence of Mental Workload on Job Performance. *International Journal of Humanities and Social Science*, 3 (15), 238 – 266.
- Rocha, L.P., Cezar-Vaz, M.R., Almeida, M.C.V., Borges, A.M., Silva, M.S. D., & Sena-Castanheira, J. (2015). Workloads and occupational accidents in a rural environment. *Texto Contexto Enferm* 24 (2), 25-35.
- Salah, LH, Radhia, IB, and Ammar-Mamlouk, ZB (2009). Call centers: "technological eldorado" or modern form of deterioration of working conditions ?. *Management Future* , (6), 74-94.
- Shaikh, A. A., & Karjaluto, H. (2015). Mobile banking adoption: A literature review. *Telematics and Informatics*, 32(1), 129-142.

- Slavin, S., & Schoech, R. (2017). *Human services technology: Understanding, designing, and implementing computer and Internet applications in the social services*. CRC Press.
- Toffler, A. (2013). Revolutionary wealth. *New Perspectives Quarterly*, 30(4), 122-130.
- VonDerheide, J. A., & Dhamodharan, R. (2017). *U.S. Patent No. 9,841,282*. Washington, DC: U.S. Patent and Trademark Office.
- Zhou, T., Lu, Y., & Wang, B. (2010). Integrating TTF and UTAUT to explain mobile banking user adoption. *Computers in human behavior*, 26(4), 760-767.