Abstract:
Members of the mobile workforce and deposit money banks that employ them face a double-edged sword. On the one hand, it is desirable for mobile workers to remain as productive as possible when they are on the road. Unfortunately, life is not perfect and neither are people, so how do deposit money banks gauge whether a mobile employee is an asset or liability? On the other hand, not all venues that accommodate these workers are entirely conducive to productivity. The main objective of the study is to investigate the effect of mobile workforce management strategies on performance of deposit money banks in South East, Nigeria. The specific objectives sought were to: determine the effects of mobile technology on productivity of deposit money banks in South-East, Nigeria, establish the extent of the effect of biometric time and attendance system on deposit money banks market share in South-East, Nigeria, assess the effects of mobile applications on stakeholders’ level of satisfaction of deposit money banks in South-East, Nigeria, ascertain the effect of contemporary environmental factors on the growth of deposit money banks in South-East, Nigeria and determine the relationship between the challenges of mobile workforce management strategies and the profitability of deposit money banks. The researcher adopted the survey design for the study. The population of the study is Six thousand four hundred and ten (6,410) comprised of both the senior and junior staff of the selected eleven deposit money banks in South East Nigeria. Primary and secondary sources of data were used in the course of the study. Works of other authors related to the study were reviewed. The sample size is five hundred and eleven (511) determined, using the finite population formula of Godden. The researcher adopted both parametric and non-parametric techniques for data analysis. The Cronbach’s Alpha coefficient yielded 0.87, indicating the reliability of the instrument. The data collected was analyzed using Spearman Pearson correlation coefficient, simple and multiple regression model. The findings indicated that: Mobile technology had positive effect on productivity of deposit money banks in South-East Nigeria (r = 0.932 p > 0.05). Biometric time and attendance system to a great extent enhanced deposit money banks’ market share in South East Nigeria (r = 0.960, p > 0.05) Mobile workforce management strategies positively affected deposit money banks stakeholders’ level of satisfaction (r = 0.950, p > 0.05). Contemporary environmental factors such as government regulation, economic conditions, technological advancement and workforce demographics to a great extent had a positive effect on the growth of deposit money banks. (r =0.962, p > 0.05). There was a positive significant relationship between challenges of mobile workforce management strategies (hackers’ infiltration, network failure and human error and the profitability of deposit money banks (r = 0.981, p > 0.05). The study concluded among others that mobile workforce management strategies offer deposit money banks critical improvements in growth and stakeholders’ level of satisfaction. The study recommended among others that management of deposit money banks should ensure that right tools and resources are made available to mobile workers, giving them the same connectivity as office based workers.

Keywords: Mobile workforce, management strategies, deposit money banks, profitability

1. Introduction

1.1. Background of the Study

Mobile workforce management strategy is a term to describe the use of mobile technology to manage and monitor teams of mobile workers. These digital systems replace many of the tasks which previously relied on paper by mobile work and manual processes. Employee scheduling, task monitoring, policy compliance and customer feedback are just some of the features offered by mobile workforce management strategies. Mobile workforce management strategy allows managers and mobile workers become more connected. Nick (2017) states that the origin of mobile workforce management strategy can be traced back to 1970’s when mechanical clocking in machines began, being linked to early computer systems.

This has changed over the past decades with cloud based software and consumer standard smartphones, combining to make mobile workforce management systems available to deposit money banks of all shapes and sizes. There are many different types of mobile workforce management systems but they share the same set up. A management dashboard is used to coordinate the work of mobile workers who are connected via a smartphone application. It allows a manager to see the exact location and task status of each employee, in real time. The smartphone application provides
employees with all the information they need to do their job. Work schedules, job duties and compliance checks are all accessed in digital form. Data collected by a mobile worker such as delivery notes and customer feedback is automatically stored and uploaded to the head office. Nick (2017) opines that one of the great strengths of mobile workforce management software is its flexibility. They can be used for just about any tasks which require the management by a team of mobile workers. Mobile workforce management strategy transforms the way deposit money banks are able to keep control of mobile workers. It provides a simple and effective way to manage and monitor employees in real time. A properly implemented system will significantly reduce waste and boost production, play a vital role in protecting workers by enforcing health and safety compliance, virtually eliminate paper and provide much greater control for employees on how, where and when to do the work. Managers can now afford to be desk-bound. Mobile technology has brought transformative change in the consumer world. Mobile environment presents new means of fundamental communication between management and staff.

1.2. Statement of Problem

Members of the mobile workforce and deposit money banks that employ them face a double-edged sword. On the one hand, it is desirable for mobile workers to remain as productive as possible when they are on the road. Unfortunately, life is not perfect and neither are people, so how do deposit money banks gauge whether a mobile employee is an asset or liability? In the office, employees are monitored efficiently by the hours put in a day compared it to their output. In the field, however, deposit money bank ‘assets’ are the mobile workforce- technicians, delivery staff, marketer, and sales force. Being out of the office means out of sight and out of mind or driving their managers out of their minds. On the other hand, not all venues that accommodate these workers are entirely conducive to productivity. What is more, hackers routing ‘sniff’ out unsecured laptops, smartphones and other handheld devices in use at offices, libraries, restaurants, and other locations, making special precautions imperative if data security is to be maintained in public places. Just as the mobile workforce is growing bigger everyday, hackers are becoming smarter and more effective in their quest to infiltrate the operations of deposit money banks in South East.

Managing a mobile workforce cost effectively can be difficult. A lack of visibility of employee locations outside the deposit money banks office, printing and distributing job packs and lost or incomplete paperwork can lead to delays in issuing invoices and reports. How can these challenges be tackled? Are mobile workforce management strategies working the way they should work in the banking sector? Are they transforming the business operation, driving innovation and creating opportunities or confusing management and draining deposit money bank resources? How can deposit money banks maximize the value they get from the people empowered with mobility? When employees are given to work remotely or more flexibly through mobile arrangement, it is understandable that managers are sometimes skeptical of their productivity. These aforementioned problems motivated this study.

1.3. Objectives of the Study

The main objective is to investigate the effect of mobile workforce management strategies on performance of deposit money banks in South East, Nigeria while the specific objectives are to:

- Determine the extent of effect of mobile technology on productivity of deposit money banks.
- Establish the extent of the effect of biometric and attendance time on market share of deposit money banks.

1.4. Research Questions

The following research questions were formulated for this study:

- To what extent does mobile technology affect productivity of deposit money banks?
- To what extent does biometric and attendance time affect market share of deposit money banks?

1.5. Research Hypotheses

The following research hypotheses were formulated for this study:

- Mobile technology significantly enhances the level of productivity in selected deposit money banks.
- Biometric and attendance time to a great extent improves market share of deposit money banks.

2. Review of Related Literature

2.1. Conceptual Review

2.1.1. Concept of Mobile Workforce Management

Jones (2006) defines mobile workers as those who work at least 10 hours per week away from home, their main place of work, for example, on business trips, in the field, travelling or on customer’s premises and use online computer connections when doing so. This definition appears to be largely stable, with few changes evident over the past ten years. Within this definition, there are five specific types of mobile worker;

- On-site movers are individuals who work on site, but move around within it e.g. security agents and information technology technicians.
- Pendulums-alternate are individuals who work at two fixed locations e.g. the employer’s office and a client’s office or a home office.
Normads– are individuals working in a number of different places and are constantly moving among them e.g. a sales agent visiting many customers a day, Management consultants working at different client sites and engineers.

Yo-yos- occasionally work away from a fixed location e.g. in jobs which require business trips.

Carriers-work whilst on the move, transporting goods or people, e.g. train conductors or aeroplane stewards.

2.1. Mobile Workers Are Increasing Faster than Home Workers

International Data Corporation (2014) Survey predicts that the increase of mobile worker will be significantly greater than the increase in employees working from home despite the widespread adoption of flexible working practices. This prediction reflects the wide range of voice video and data services that are now available to user such as code division multiple access, global system for mobile communication, wireless local area network, digital subscriber line and devices (personal digital assistant, personal computers and other tailored devices) which makes working on the move possible.

Brahcmann (2014) indicates that where home working has failed to bring greater productivity, there are high hopes for mobile working. The family project, for example, found that Danish workers who alternated between locations were highly productive, whereas permanent and near-permanent remote workers were less productive than office workers. The main reason for the remote workers’ poor performance was the isolation that they experienced due to reduced social and informal interaction with colleagues and insufficient access to intra-company information flows.

Workers who have voice, video and data services that support informal communication as well as broadband and wireless technology are equipped to overcome these barriers and are likely to be more productive. Moreover, those who can work on the move can be more efficient with their time. Cisco’s Survey Report (2014) indicates that:

- Increase in mobile working are not limited to the traditional markets of Asia, the United States and Western Europe. In Latin America, Central and Eastern Europe, Middle East, Africa and Russia, where mobile penetration exceeds fixed-lined penetration, information and communication technology spending is also increasing creating a fertile environment for mobile working practices.
- Mobile and remote communications using broadband technologies and voice video and data services are set to increase in line with global increases in mobile working. With this business must ensure that they adopt process structures, new resources and management strategies that make mobile working effective if they are to benefit from increased productivity.

2.1.3. The Emerging Profile of Mobile Workers

International Data Corporation (2004) reveals that mobility within the global workforce is booming. According to International Data Corporation’s global study of mobile working trends published in 2014, the largest number of mobile workers, are in Asia/pacific (excluding Japan), followed by the United States and Western Europe.

The mobility revolution can be expressed by five main drivers:

- Businesses (and individuals) like to communicate on the move.
- Mobility increases corporate productivity and competitiveness
- Well developed broadband mobile devices, technologies and services
- Mobile technology supports personal communication.
- Digital information and content are increasingly pervasion

Mobile workers are increasing faster than home workers

International Data Corporation (2014) predicts that the increase of mobile workers will be significantly greater than the increase in employees working from home, despite the widespread practices. This prediction reflects the wide range of voice, video and data services that are now available to users such as code division multiple access, global system for mobile communication, wireless local area network, digital subscriber line and other devices like personal computers, and tailored devices which make working on the move possible. Mobile workers can be more productive than home workers.

2.2. Theoretical Framework

2.2.1. Expectancy Theory

Conventional expectancy theory holds that effort will only lead to performance if the associated outcomes are valued and placed in high regard. Although the Porter and Lawler expectancy model of motivation as discussed in Staw (2004:35) include the fundamentals of Vroom’s original approach, a number of modifications have been made. Whereas Vroom’s model suggested that satisfaction leads to performance, the Porter and Lawler model argues that it is performance that leads to satisfaction. This represents a significant departure from early expectancy theory and augments the mobile workforce hypothesis, that is, being motivated by work itself.
Additional features of the Porter and Lawler model depicted in Figure 1 as compared to conventional expectancy theory includes, abilities and traits as well as role perceptions that play a role in individual ability to perform. In addition, the perceived value of reward together with the effort-reward probability combines at the outset with individual ability and role perceptions in determining whether effort will be expanded. Performance results in intrinsic rewards that are associated with feelings of accomplishment and achievement, whereas extrinsic rewards denote tangible outcomes such as pay and promotion. In the perceived equity section of the model, individuals judge whether their performance delivered to the organization is commensurate with the rewards received and if found to be equitable only then will the individual feel satisfied. The more equitable the rewards are perceived, the more individuals will perform and in turn exert more effort in pursuance of valued outcomes.

2.3. Empirical Review

2.3.1. Effects of Mobile Workforce Management Strategies

Clemons and Kroth (2015) conducted an in-depth survey with the title ‘effect of mobile workforce management strategies on the performance of selected manufacturing organizations in New York, United States of America. The study adopted survey design and drew a sample of 40 leaders of organizations ranging from small entrepreneurial start-up to state government owned businesses. 500 corporations were selected for the study. The data collected were analyzed with simple regression. The result showed that leadership and strategy and not technology is the chief banner to success for the mobile workforce. They recommended that the upshot managers must simultaneously inform mobile employees of new initiatives, keep them engaged and provide them with the best possible tools to complement the competitive direction and mission plan of the organization. Managers must also set up parameters that will permit mobile workers to be responsive and responsible. The researcher affirmed of the findings of the study that mobile employees should be given free hand to operate in the field.

Clemons and Kroth (2015) conducted another study on ‘the effect of mobile workforce management strategies on productivity of organization’ in New York. The study adopted survey design. Non-probability random sampling technique and multiple regression analysis were applied and 200 questionnaires were distributed to respondents on 5-point Likert scale. The study revealed that mobile workforce management strategies increase the productivity of organizations. According to the study, decentralization of the workplace, enhanced the work of mobile workers in hospital, where hospital staff roam the halls and are only reachable via mobile device, at home where people will take advantage of growing flexible work schedule options, anywhere global entrepreneurs need to meet clients wherever they may be or any place, that drivers, sales persons, pilots, consultants, educators need to be.

Clever and McCauley (2006) conducted a study to determine the effect of mobile technology on profitability of manufacturing organization in North America. The study adopted a descriptive correlation design and drew a sample of 100 senior executives knowledgeable about their companies’ use of mobile technology, as well as with independent experts. The study revealed that mobile technology has rapidly penetrated the workplace in recent years, leading to widespread changes in working practices and management strategies. The effect on mobile workforce productivity has been vastly positive across regions and industries. Based on the survey, 100 senior executives in North America, as well as a series of interviews with practitioners and independent experts, the study found reason for optimism and caution as firms increasingly ‘go mobile’. The key findings were highlighted below:

- Mobile clearly delivered better productivity. Over two-thirds of surveyed executives agreed that their personal productivity had improved by at least 20%, as a result of use of mobile technology (including phones, Black Berry, Wireless fidelity-enabled Laptops, other mobile devices and applications, while 91% agreed that mobile technology had boosted the productivity of their productivity substantially. These benefits have manifested themselves most clearly in easier, faster access to people and reduced ‘dead time’ while travelling, and overall in an improved level of responsiveness within the organization.

- Integration with core enterprise system is central to continual productivity gains. Surveyed executives view integration of mobile applications with core enterprise systems as among the key measures to ensure further productivity gains from mobile technology.
3. Methodology

3.1. Research Design

The survey design is the most appropriate because it permits direct contact with the unit of study through the means of instruments such as questionnaire.

3.2. Sources of Data

The data for this study were obtained specifically from two sources namely: primary and secondary sources.

3.2.1. Primary Source of Data

In collecting primary data for the study, device employed was questionnaire. Research questionnaire was the major research instrument for this study. The questionnaire comprises two sections, section A entail questions soliciting the respondent’s socio-demographic data while section B have design in 5 Likert scale of strongly agree, agree, undecided, disagree and strongly disagree.

3.2.2. Secondary Source of Data

This relates to information gathered and recorded by some other persons. The sources of secondary data include text books, journal and other published works in relation to the study. The information collected through this source was mainly used in the literature review aspect of the study, to help the researcher have a close grasp of the extent of the work in the area of investigation.

3.3. Population of the Study

The population of this study consisted of respondents from the selected eleven (11) deposit money banks operating in the South-East Nigeria (Enugu, Anambra, Imo, Abia and Ebonyi States). A total of Six thousand, four hundred and Ten (6410) respondents comprising both the senior and junior staff of the deposit money banks.

| S/N | Bank Name and Address                                                                 | Number of Employees |
|-----|---------------------------------------------------------------------------------------|---------------------|
| 1   | First Bank, Main Branch, Enugu, Enugu State                                            | 750                 |
| 2   | Union Bank of Nigeria, Bank Road, Umuahia, Abia State                                  | 600                 |
| 3   | Diamond Bank (Nigeria) Awka, Anambra State                                             | 550                 |
| 4   | Guaranty Trust Bank, Abakaliki, Ebonyi State                                           | 600                 |
| 5   | Zenith Bank, Owerri, Imo State                                                        | 720                 |
| 6   | Unity Bank, (Nigeria) Ogui Road, Enugu, Enugu State                                    | 400                 |
| 7   | EcoBank, Bank Road, Umuahia, Abia State                                               | 700                 |
| 8   | Heritage Bank, Awka, Anambra State                                                    | 450                 |
| 9   | United Bank for Africa (UBA), Station Road, Enugu                                      | 560                 |
| 10  | Access Bank, Abakaliki, Road, Enugu State                                             | 620                 |
| 11  | Fidelity Bank, Umuahia, Abia State                                                    | 460                 |
|     | Total                                                                                 | 6,410               |

*Table 1: The Population of the Study Area
Source: Researcher Field Compilation, 2020*

3.4. Sample Size Determination

Sample size refers to a proportion of the population, which was taken as a representation of the whole population and on which conclusion made on them based on the data, which they give was taken to be peculiar to all members of the whole population. The actual population of the senior and Junior staff of in the eleven (11) selected money deposit banks in the South-east, Nigeria is Six thousand, four hundred and ten, using the finite populations formula of Godden (2004) as quoted in Okebaram (2014) to determine the sample size.

\[
SS = \frac{Z^2 \times (P \times (1-P))}{C^2}
\]

Given =

\[
SS = \frac{SS}{(1 + (SS - 1))}
\]

Where:

- \(SS\) = Sample size
- \(Z\) = Confidence level (95%)
- \(P\) = Percentage of population picking a choice worst case % of the sample (90% or 0.9).
- \(C\) = Confidence Interval, expressed as decimal.
- \(POP\) = Total population (6,410)
Godden (2004:1) states that this formula is best applied where the population is less than 50,000.

Substituting

\[ Z = 95\% \times (1.96) \]
\[ P = 90\% \times (0.9) \]
\[ C = 0.025 \]

\[ SS = \frac{1.96^2 \times (0.9) \times (1 - 0.1)}{0.025} \]

\[ SS = \frac{3.8416 \times (0.9) \times (0.1)}{0.000625} \]

\[ SS = 553.19 \]

\[ POP = 6,410 \]

\[ \therefore \text{New SS} = 553.19 \]

\[ 1 + (553.19 - 1) \]

\[ 6,410 \]

\[ = 552.19 \times 0.08 = 511.287037 \]

\[ \Omega = 511 \]

3.5. Sampling Techniques

A sample of 511 (Five hundred and Eleven) respondents were selected from the population of the study using Purposive Sampling Technique. This is most appropriate since it enables the researcher have direct contact with the respondents. The researcher attempted to zero in on the targeted sample in the eleven selected Deposit money banks. In order to get the quantity of the questionnaire to be distributed in each of the eleven (11) Deposit money banks, the sample size has to be broken down using Bowley's population allocation statistic formula. It is thus:

\[ n = n_1 \times \frac{n}{N} \]

Where

\[ n_1 = \text{Element within the sample.} \]
\[ n = \text{Sample size.} \]
\[ N = \text{Total population} \]

Substitute the figure of each bank branch above with Bowley's formula.

- First Bank = 511 x 750/6410 = 60
- Union Bank = 511 x 600/6410 = 48
- Diamond Bank = 511 x 550/6410 = 48
- Guaranty Trust Bank = 511 x 600/6410 = 48
- Zenith Bank = 511 x 720/6410 = 57
- Unity Bank = 511 x 400/6410 = 31
- Eco Bank = 511 x 700/6410 = 55
- Heritage Bank = 511 x 450/6410 = 35
- United Bank for Africa = 511 x 560/6410 = 44
- Access Bank = 511 x 620/6410 = 49
- Fidelity Bank = 511 x 460/6410 = 36

| Banks                  | Population | No of questionnaire administered | Percentage of questionnaire % |
|------------------------|------------|----------------------------------|------------------------------|
| First Bank             | 750        | 60                               | 12                           |
| Union Bank             | 600        | 48                               | 9                            |
| Diamond Bank           | 550        | 48                               | 9                            |
| Guaranty Trust Bank    | 600        | 48                               | 9                            |
| Zenith Bank            | 720        | 57                               | 11                           |
| Unity Bank             | 400        | 31                               | 6                            |
| Eco Bank               | 700        | 55                               | 11                           |
| Heritage Bank          | 450        | 35                               | 7                            |
| UBA                    | 560        | 44                               | 9                            |
| Access Bank            | 620        | 49                               | 10                           |
| Fidelity Bank          | 460        | 36                               | 7                            |
| Total                  | 6410       | 511                              | 100                          |

Table 2: Allocation of Sample Size
Source: Field Survey, 2020
3.6. Description of Research Instrument

The instruments for data collection used in this study were structured questionnaire and interview. The questionnaire has two parts. All the question in part A provides general information about the respondents while the remaining questions in part B address the research questions. The designed questionnaire was on a 5-point Likert scale arranged according to the objective. The responses are Strongly Agree (SA), Agree, (A), Undecided, (U) Disagree (D) and Strongly disagree (SD). For positive statements the scores are 5, 4, 3, 2 and 1. Also, an oral interview guide was used.

3.7. Reliability of the Instrument

A test-re-test method was adopted for this study. A pilot study was carried out in order to ensure the reliability of the instrument used for this study. This method involved administering twenty-five (25) questionnaire to two groups of respondents under study. After two weeks, the twenty-five (25) questionnaire were collected and re-administered the two groups for the second time. The degree of similarity between the sets of scores obtained from the two groups determined the reliability of the test. The reliability of the test instrument, was estimated by examining the consistency of the responses between the two tests. The results obtained from the two tests were consistent, hence the instrument was reliable.

The researcher employed Spearman Pearson Ranking Order Correlation Coefficient (R) to assess relationship.

\[ R = \frac{1-\frac{\sum d^2}{N(N-1)}}{N^2-1} \]

Where:

\[ N = 25 \]
\[ N^2 = 511 \]
\[ \sum d^2 = 327.9925 \]

\[ R = \frac{1-\frac{29(327.9925)}{2(240)}}{2\times(210)} \]
\[ = 1-\frac{1-1677.088}{1470} \]
\[ = 1-\frac{1-1677.088}{1470} \]
\[ = 1-\frac{0.154349}{0.845651} \]
\[ = 0.85 \]

\[ \therefore 0.85 \text{ is close to } 1.0, \text{ hence we can conclude that 1st scores and the 2nd test scores agree very much with each other in their ranking. The table is in the appendix.} \]

3.8. Method of Data Analysis

Data were presented in tables and percentages. Thus both parametric and non-parametric techniques for data analysis were used for the hypotheses testing. Hypotheses 1, 2, and 3, were tested by simple Linear regression while hypothesis 4 and 5 were tested by multiple regression using statistical package for the social sciences (SPSS 15.00 version). The multiple regression test statistic is the most appropriate because of the large sample size.

3.9. Decision Rule

In testing hypotheses, the calculated value of the test statistic was compared with critical or table value. The critical or table value serves as a benchmark for rejecting or not rejecting the null hypothesis. Reject the H₀ and uphold H₁ (alternate hypothesis) if the Z-table calculated exceeds the Z-table (critical value). Otherwise do not reject the null hypothesis. Here, regression tested the extent of the relationship between two or more variables while the Z-test test the significance or fit of the variables.

4. Data Presentation and Analyses

4.1. Introduction

Data collected in the course of this study were presented in this chapter descriptively with the aid of frequency tables. Also, the mean responses and standard deviation were presented. The results from the various tests of hypotheses were presented, also.

4.2. Data Presentation

This section contains the responses of the respondents to the questions in the study questionnaire.

4.2.1. Return Rate of Questionnaire

Five hundred and eleven (511) copies of the study questionnaire were administered to the sample study. Out of this number, four hundred and eighty-four (484) copies were correctly filled and returned, while twenty-seven (27) copies
were not correctly or returned (see Table 3). Based on the high rate of return, the return copies were deemed adequate to provide the data for this study.

| Bank          | Administered (%) | Correctly Filled and Returned (%) | Incorrectly Filled or Not Returned (%) |
|---------------|------------------|----------------------------------|---------------------------------------|
| First Bank    | 60 (100.0)       | 54 (90.0)                        | 6 (10.0)                              |
| Union Bank    | 48 (100.0)       | 46 (95.8)                        | 2 (4.2)                               |
| Diamond Bank  | 48 (100.0)       | 46 (95.8)                        | 2 (4.2)                               |
| GTB           | 48 (100.0)       | 46 (95.8)                        | 2 (4.2)                               |
| Zenith Bank   | 57 (100.0)       | 53 (93.0)                        | 4 (7.0)                               |
| Unity Bank    | 31 (100.0)       | 30 (96.8)                        | 1 (3.2)                               |
| Ecobank       | 55 (100.0)       | 52 (94.5)                        | 3 (5.5)                               |
| Heritage Bank | 35 (100.0)       | 34 (97.1)                        | 1 (2.9)                               |
| UBA           | 44 (100.0)       | 42 (95.5)                        | 2 (4.5)                               |
| Access Bank   | 49 (100.0)       | 46 (93.9)                        | 3 (6.1)                               |
| Fidelity Bank | 36 (100.0)       | 35 (97.2)                        | 1 (2.8)                               |
| Total         | 511 (100.0)      | 484 (94.7)                       | 27 (5.3)                              |

**Table 3: Return Rate of Questionnaire**  
*Source: Field Survey, 2020*

4.2.2. Respondents’ Demographic Characteristics

The demographic characteristics of the respondents are presented here.

4.2.2.1. Sex

The distribution of the respondents based on their sex is presented in Table 4.

| Sex    | Frequency | Percent (%) |
|--------|-----------|-------------|
| Male   | 255       | 52.7        |
| Female | 229       | 47.3        |
| Total  | 484       | 100.0       |

**Table 4: Sex Distribution of Respondents**  
*Source: Field Survey, 2020*

Table 4 shows that majority (52.7%) of the respondents are males. However, the difference between male and female participation in the study is not much (5.4% difference).

4.2.2.2. Marital Status

The distribution based on their marital status is presented in Table 5.

| Marital Status | Frequency | Percent (%) |
|----------------|-----------|-------------|
| Single         | 294       | 60.7        |
| Married        | 190       | 39.3        |
| Total          | 484       | 100.0       |

**Table 5: Respondents’ Distribution Based on Marital Status**  
*Source: Field Survey, 2020*

As presented in Table 5, 294 (60.7%) respondents are single while 190 (39.3%) respondents are females.

4.2.2.3. Age Range

The respondents' frequency distribution based on the age range is presented in Table 6.

| Age (years) | Frequency | Percent (%) |
|-------------|-----------|-------------|
| 30 – 40     | 212       | 43.8        |
| 41 – 50     | 179       | 37.0        |
| 51 years and above | 93     | 19.2        |
| Total       | 484       | 100.0       |

**Table 6: Respondents’ Distribution Based on Age Range**  
*Source: Field Survey, 2020*

Table 6 reveals that 212 (43.8%) respondents are aged 30 to 40 years, 179 (37%) respondents are aged 41 to 50 years and 93 (19.2%) respondents are aged 51 years and above.
4.2.2.4. Educational Qualification

The presentation of the respondents’ distribution based on their educational qualification is seen in Table 7.

| Educational Qualification | Frequency | Percent (%) |
|---------------------------|-----------|-------------|
| OND                       | 134       | 27.7        |
| HND/BSc                   | 253       | 52.3        |
| PhD                       | 97        | 20.0        |
| Total                     | 484       | 100.0       |

Table 7: Distribution of Respondents according to Educational Qualification
Source: Field Survey, 2020

Table 7 shows that 134 (27.7%) respondents have OND, 253 (52.3%) respondents have HND/BSc and 97 (20%) respondents have PhD.

4.2.2.5. Length of Period in Service

The distribution of the respondents based on their length of period in service is presented in Table 8.

| Length of Period               | Frequency | Percent (%) |
|--------------------------------|-----------|-------------|
| 1 to 5 years                   | 149       | 30.8        |
| 6 to 10 years                  | 231       | 47.7        |
| 11 years and above             | 104       | 21.5        |
| Total                          | 484       | 100.0       |

Table 8: Distribution of Respondents by Length of Period in Service
Source: Field Survey, 2020

Based on the data presented in Table 8, the length of service for 149 (30.8%) respondents is 1 to 5 years, that of 231 (47.7%) respondents is 6 to 10 years while that of 104 (21.5%) respondents is over 11 years and above.

4.2.3. Data Presentation Based on Study Objectives

Responses to the questions in the study questionnaire are presented in this section based on the study objectives. The presentation of the data is based on the decision rule stated below.

Decision Rule
If Mean < 3.5, the respondents are not in agreement with the statement
If Mean ≥ 3.5, the respondents are in agreement with the statement

4.2.3.1. Effect of Mobile Technology on Productivity of Deposit Money Bank

The respondents’ responses on the effect of mobile technology on productivity of deposit money bank is presented in Table 9.

| Statement                                                                 | SA (%) | A (%) | U (%) | D (%) | SD (%) | Mean (Std.) |
|-------------------------------------------------------------------------|--------|-------|-------|-------|--------|-------------|
| Recent technological innovations such as smart phones allow mobile workers to access the corporate information while being away from their offices | 140 (28.9) | 191 (39.5) | 60 (12.4) | 48 (9.9) | 45 (9.3) | 3.67 (1.25) |
| Mobility enables deposit money banks to maximize return on real estate and resource investment | 132 (27.3) | 216 (44.6) | 55 (11.4) | 50 (10.3) | 31 (6.4) | 3.76 (1.15) |
| Mobile e-mail provides an instantaneous delivery and access mechanism that appear to be highly supportive of time critical tasks in deposit money banks | 104 (21.5) | 224 (46.3) | 64 (13.2) | 59 (12.2) | 33 (6.8) | 3.63 (1.15) |
| Mobile devices and applications boost the productivity of deposit money banks | 152 (31.4) | 245 (50.6) | 38 (7.9) | 29 (6.0) | 20 (4.1) | 3.99 (1.00) |

Table 9: Effect of Mobile Technology on Productivity
Source: Field Survey, 2020

In response to the questions on the effect of mobile technology on productivity, Table 9 shows that 140 (28.9%) respondents strongly agreed that recent technological innovations such as smart phones allow mobile workers to access the corporate information while being away from their offices. This is also the perception of 191 (39.5%) respondents...
who agreed with this statement. However, 48 (9.9%) respondents and 45 (9.3%) respondents disagreed and strongly disagreed with this statement respectively. While 60 (12.4%) respondents were undecided. The mean score of $3.67 \pm 1.25$ shows that the respondents are in agreement that recent technological innovations such as smartphones allow mobile workers to access the corporate information while being away from their offices.

The responses of 132 (27.3%) respondents who strongly agreed, 216 (44.6%) respondents who agreed, 55 (11.4%) who were undecided, 50 (10.3%) respondents who disagreed and 31 (6.4%) respondents who strongly disagreed as well as the mean score of $3.76 \pm 1.15$, indicates that the respondents are of the general opinion that mobility enables deposit money banks to maximize return on real estate and resource investment.

Based on the mean response score of $3.6 \pm 1.15$ and the responses of 104 (21.5%) respondents who strongly agreed, 224 (46.3%) respondents who agreed, 64 (13.2%) respondents who were undecided, 59 (12.2%) respondents who disagreed and 33 (6.8%) respondents who strongly disagreed, it is the determination of the respondents that mobile e-mail provides an instantaneous delivery and access mechanism that appear to be highly supportive of time critical tasks in deposit money banks.

In response to whether mobile devices and applications boost the productivity of deposit money banks, 152 (31.4%) respondents strongly agreed, 245 (50.6%) respondents agreed, 38 (7.9%) respondents were undecided, 29 (6%) respondents disagreed and 20 (4.1%) respondents strongly disagreed. With this response and the mean response score of $3.99 \pm 1.00$, the respondents are of the general opinion that mobile devices and applications boost the productivity of deposit money banks.

4.2.3.2. Effect of Biometric and Attendance Time on Market Share of Deposit Money Bank

Table 10 captures the respondents’ opinions on the effect of biometric and attendance time on market share of deposit money bank.

| Statement                                                                 | SA (%)  | A (%)   | U (%)   | D (%)  | SD (%) | Mean (Std.) |
|--------------------------------------------------------------------------|---------|---------|---------|--------|--------|-------------|
| Labour costs associated with buddy-punching, the practice of one employee ‘clocking’ in or out for another are virtually eliminated with biometrics which affect the market share of deposit money banks | 102 (21.1) | 252 (52.1) | 89 (18.4) | 26 (5.4) | 15 (3.1) | 3.83 (0.93) |
| Integration of biometric into mobile workforce management system positively affect market share of deposit money banks | 117 (24.2) | 246 (50.8) | 74 (15.3) | 38 (7.9) | 9 (1.9) | 3.88 (0.93) |
| Biometric time clock eliminate conflict over hours worked and time accrual benefits for mobile employees | 167 (34.5) | 235 (48.6) | 21 (4.3) | 32 (6.6) | 29 (6.0) | 3.99 (1.09) |
| Deposit money banks can achieve a broader range of direct and indirect time cost and operational benefits than alternative time method through biometric system | 106 (21.9) | 241 (49.8) | 78 (16.1) | 27 (5.6) | 32 (6.6) | 3.75 (1.07) |

*Table 10: Effect of Biometric and Attendance Time on Market Share of Deposit Money Bank*

Source: Field Survey, 2020

As shown in Table 10, it is the general view of the respondents that labour costs associated with buddy-punching, the practice of one employee ‘clocking’ in or out for another are virtually eliminated with biometrics which affect the market share of deposit money banks. This is captured in the mean score of $3.83 \pm 0.93$ and the responses of 102 (21.1%) respondents who strongly agreed, 252 (52.1%) respondents who agreed, 89 (18.4%) respondents who were undecided, 26 (5.4%) respondents who disagreed and 15 (1.1%) respondents who strongly disagreed.

Based on the responses of 117 (24.2%) respondents and 246 (50.8%) respondents who strongly agreed and agreed respectively as well as the mean response score of $3.88 \pm 0.93$, the respondents are of the general opinion that integration of biometric into mobile workforce management system positively affects market share of deposit money banks. However, 74 (15.3%) respondents were undecided about this, 38 (7.9%) respondents disagreed with this and 9 (1.9%) respondents strongly disagreed with this.

The opinions of the respondents on whether biometric time clock eliminates conflict over hours worked and time accrual benefits for mobile employees is verified in the respondents’ responses. From the responses of 167 (34.5%) respondents, 235 (48.6%) respondents, 21 (4.3%) respondents, 32 (6.6%) respondents and 29 (6%) respondents who strongly agreed, agreed, were undecided, disagreed and strongly disagreed respectively as well as the mean response score of $3.99 \pm 1.09$, the respondents are generally in agreement with this assertion.
Having a mean response score of 3.75 ± 1.07, as well as 106 (21.9%) respondents strongly agreeing, 241 (49.8%) respondents agreeing, 78 (16.1%) respondents not being decided, 27 (5.6%) respondents disagreeing and 32 (6.6%) respondents strongly disagreeing; it is the general conception of the respondents that deposit money banks can achieve a broader range of direct and indirect time cost and operational benefits than alternative time method through biometric system.

4.3. Test of Hypotheses
The results from the various tests of hypotheses are presented in this section.

4.3.1. Test of Hypothesis One
Mobile technology significantly enhances the level of productivity in selected deposit money banks
This hypothesis is tested using the linear regression analysis. The results are summarized thus;

| Variable                  | Coefficient | t-value | p-value |
|---------------------------|-------------|---------|---------|
| Constant                  | 1.034       | 18.759  | 0.000   |
| Mobile Technology (MT)    | 0.801       | 56.297  | 0.000   |

Table 11: Summarised Regression Results for Hypothesis One

\[ r = 0.932; r^2 = 0.868; \text{RegSS} = 421.816; \text{ResSS} = 64.151; F\text{-value} = 3169.338; \text{sig.} = 0.000 \]

Source: Appendix 3

The result of the regression analysis summarized in Table 11 shows that the model for the relationship between mobile technology (MT) and productivity (P) is: \[ P = 1.034 + 0.801MT \]
This reveals that mobile technology (MT) has positive impact on performance (P). With \( t\)-value > 1.96 (t-critical) and \( p\)-value < 0.05, this impact is significant.

Also, the regression coefficient (\( r \)) of 0.932 indicates a strong relationship between the independent variable (mobile technology) and the dependent variable (productivity). The coefficient of determination (\( r^2 \)) of 0.868 reveals that 86.8% of the variation observed the dependent variable is caused by the independent variables. Having a regression sum of square of 421.816-> the residual sum of squares of 64.151, this variation is not due to chance. The F-value and corresponding significance value of 3169.338 (0.000) shows that these results are significant.

Based on this, the results indicate that there is a significant positive effect of mobile technology on level of productivity in the selected deposit money banks.

4.3.2. Test of Hypothesis Two
Biometrics and attendance time to a great extent improves market share of deposit money banks
This hypothesis is tested using the linear regression analysis. The results are summarized thus;

| Variable                          | Coefficient | t-value | p-value |
|-----------------------------------|-------------|---------|---------|
| Constant                          | 0.443       | 9.388   | 0.000   |
| Biometrics and Attendance Time (BAT) | 0.891       | 75.140  | 0.000   |

Table 12: Summarised Regression Results for Hypothesis Two

\[ r = 0.960; r^2 = 0.921; \text{RegSS} = 383.797; \text{ResSS} = 32.765; F\text{-value} = 5646.034; \text{sig.} = 0.000 \]

Source: Appendix 4

The result of the regression analysis summarized in Table 12 shows that the model for the relationship between biometrics and attendance time (BAT) and market share (MS) is: \[ MS = 0.443 + 0.891\text{BAT} \]
This reveals that biometrics and attendance time (BAT) has positive impact on market share (MS). With \( t\)-value > 1.96 (t-critical) and \( p\)-value < 0.05, this impact is significant.

Also, the regression coefficient (\( r \)) of 0.960 indicates a strong relationship between the independent variable (biometrics and attendance time) and the dependent variable (market share). The coefficient of determination (\( r^2 \)) of 0.921 reveals that 92.1% of the variation observed the dependent variable is caused by the independent variables. Having a regression sum of square of 383.797-> the residual sum of squares of 32.765, this variation is not due to chance. The F-value and corresponding significance value of 5646.034 (0.000) shows that these results are significant.

Based on this, the results indicate that biometrics and attendance time to a great extent improves market share of deposit money banks.

5. Summary of Findings, Conclusion and Recommendations

5.1. Summary of Findings

- Mobile technology significantly enhanced the level of productivity in selected deposit money banks in South-East, Nigeria (\( r = 0.932, p > 0.05 \)).
- Biometric time and attendance system to a great extent enhanced market share of deposit money banks in South-East Nigeria (\( r = 0.960, p > 0.05 \)).
5.2. Conclusion
The study concluded that mobile technology significantly enhances the level of productivity of selected deposit money banks. Mobile technology increases the performances of mobile work force, thereby increasing productivity gains of deposit money banks. It was further concluded that Biometric time and attendance system to a great extent enhances market share of deposit money banks. One of the critical success factors for any workforce management strategies is the ability to address time theft. Biometric-based time and attendance system virtually eliminate the most significant sources of time theft known as buddy punching, the practice of one worker clocking in or out for another. Biometrics offers the only effective means of addressing the buddy-punching dilemma by directly linking an individual worker to a personal labour record. Biometric time and attendance system offers money deposit banks a broader range of direct and indirect time cost and operational benefits than alternative time and attendance methods.

5.3. Recommendations
In view of the findings earlier stated, the following recommendations are made with the firm belief that if implemented will result in overall improvement in deposit money banks performance.
- Management of deposit money banks must ensure that the right tools such as laptop enabled wireless fidelity, personal digital computers and resources are made available to mobile workers, giving them the same connectivity as office-based workers.
- The management of various deposit money banks should ensure that mobile employees engaged in overtime work, should be well compensated as this will motivate them and leads to extra productivity.
- On line banking should be done preferably from a Wireless fidelity Protected Access 2 (WpA2) net work to prevent the activities of hackers.

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