

Full Length Research

Assessment on the roles of information technology in improving the customer satisfaction and employee performance of commercial banks: The case of Dashen and United Bank Branches in Mizan-Aman, Southwestern Ethiopia

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Received 18 August, 2020; Accepted 9 September, 2020

The study was conducted with the major objective of assessing the impact of IT on the performance of commercial banks in Ethiopia. In order to accomplish its general objective, the study attempted to evaluate the effects of IT on customer satisfaction, employee performance as well as bank revenue. The three dimensions were used as crucial indicators of the impact of IT on overall bank performance. Two cross-sectional surveys were conducted to gather the necessary data from the 372 customers and 24 employees of the Mizan-Aman branches of Dashen and United Banks in Southwestern Ethiopia. In addition, the annual performance reports of both banks, particularly the ones for 2015 and 2016 fiscal years, were reanalyzed as data sets for assessing the impact of IT on bank revenue. The findings of the study clearly indicated that IT indeed has an impact on the performance of commercial banks. It was found that the IT based services provided by the two bank branches were found to be convenient and user-friendly to customers. The study has also indicated that customers have found both banks to be efficient not only in terms of service delivery but also in terms of their ability to maintain their IT products. IT also positively affected the job performance of bank employees by reducing their workload and improving their accuracy. Meanwhile, broadband and electric power fluctuations were found to have a significant negative impact on both customer satisfaction and employee performance. Finally, an exploratory overview of the financial performance of the two banks has indicated that IT based services constituted a significant percent of the banks' gross profit for both 2015 and 2016 fiscal years.

Key words: Customer satisfaction, commercial banking, Dashen Bank, employee performance, information technology, United Bank.

INTRODUCTION

The establishment of Bank of Abyssinia on February 16, 1906 marked the beginning of modern banking in Ethiopia. The bank was opened as a result of a 1905

agreement between Emperor Minilik II and Mr. Ma Gillivray, representative of the British owned National Bank of Egypt. A year after its inauguration the bank

started selling its shares at Addis Ababa, New York, London, Paris and Vienna, and opened branches in Harar, Dembidolo, Gore, Dire Dawa as well as an agency office at Gambella and a transit office in Djibouti (NBE, 2010).

In 1932, Emperor Haileselassie, in agreement with National Bank of Egypt, liquidated the Bank of Abyssinia by paying compensation to shareholders and established Bank of Ethiopia with Ethiopian shareholders with a capital of 750,000 pound sterling. At the time, the major shareholders were the Emperor and the then political elites. The bank was functional until the Italian invasion in 1935 which latter follows with the entrance of Italian Banks. The National Bank of Ethiopia was established in 1963 by proclamation 206/1963 and began operation in January 1964 (NBE, 2007).

After the 1974 revolution, all private banks and insurance companies merged and nationalized under supervision and control of National Bank of Ethiopia starting from January 1, 1975 (NBE, 2010). Later, when EPRDF controlled the country in 1991, it decreed a new banking law in January 1994 titled Proclamation No. 84/1994 which allowed the establishment of private commercial banks in the country. And sixteen private commercial banks have been established since then.

When it comes to Information Technology (IT), it refers to the application of computers and internet to store, retrieve, transmit and manipulate data, or information, often in the context of a business or other enterprises. Banks like other enterprises use IT as their computing tool to excel the service they render. Most researchers conclude that IT has two positive effects on bank's performance. First, IT can assist banks in reducing the operational and human resource costs. Like for instance, IT can minimize the paper works which can be utilized to transact money transfers, and can be easily applied by internet banking or mobile banking with no paper. IT can increase the efficient of the banks by reducing landline telephone costs by using online transactions. Also, an individual can perform various transactions through IT that would be performed by various employees (Farrell and Saloner, 1985).

Second, IT can facilitate transactions among customers with in the same network. Since customers come from different socio-economic backgrounds banks could provide a wide variety of first-rate services to their more distinguished customers who will not settle for mediocre services. As a result, the banking sector has shown a tremendous expansion in almost all societies. This is partly due to the fact that banking services have touched most aspects of contemporary society's life and activities (Farrell and Saloner, 1985).

This article is an output of a research done on the

impact of information technology on the performance of commercial banks in Ethiopia. The research was conducted by taking the Mizan-Aman branches of Dashen and United Banks as particular cases of reference.

Statement of the problem

Financial industries, especially commercial banks, are currently becoming highly competitive and the computation is becoming so tough through service differentiation, easiness of service availability, culture and religion based product services and information technology application. Growing profitability by adopting innovative technology that would enhance customers' satisfaction is becoming the core of any banks' strategies. The challenges related to IT in Ethiopian commercial banking industry shall be classified in four major categories.

Security concerns associated with IT such as, Malware, Viruses, Trojans, Worms, Phishing spam and Spoofing, etc. including acts of intruders and hackers are becoming major challenge in the world. Security will always remain high on the IT agenda simply because cyber criminals know that a successful attack can be very profitable. This means they will always strive to find new ways to circumvent IT security, and users will consequently need to be continually vigilant.

Currently, banks are becoming more and more dependent on the use of IT for their day to day banking operations. Cyber-attacks on information system are often aggressive, well organized and very sophisticated (United Bank, 2012).

Since these technologies for the industry are at the infant stage, the problem remains at its high risk currently. For instance, Chris (2016) reported some pretty strong attack on banks' cyber-defenses in the past year, 2015. Three major incidents in the swift network, 50 at the Federal Reserve, problems at the bank of England and many other central banks, a major Incident at the Danish payment processor Nets, and big banks such as HSBC and JPMorgan have all been affected.

Seamless Information Technology supportive banking makes banking convenient for customers as it allows them to transact from anywhere, at any time 24/7 (United Bank, 2012). But this might not always hold true as Agbada (2008) claims that some consumers might be impaired as a result of age, or might have learning impairment and other might be physically disabled. Multi-channel delivery products like Mobile banking, Internet banking, ATM banking and Fund transfer through IT are operated by the customer itself. Customers with hearing

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problem may require visual representation of auditory information that a web site may provide in order to understand such information, particularly now that the use of multimedia such as video streaming on websites have increased. Besides, consumers with hearing impairments cannot locate or identify command or control that require listening to menu items before pressing the button as we have in voice-based interactive mobile phones. In addition to this, in developing countries like Ethiopia, majority of bank customers are not literate enough to handle the multi-channel transactions accordingly, and this in return led them to lose confidence on their bank financial accounts.

The major problem to apply an IT based banking structure in developing countries like Ethiopia is the problem of infrastructures like electricity and telecommunication, both of which are controlled by a monopoly. As can be witnessed by anyone who stayed in Ethiopia, the electric power usually cannot consistently be kept active the whole working day, which definitely affects the operation of E-banking like ATM and POS services. In other words, the interruption of broadband networks by the monopolized telecom supplier, Ethio telecom, affects the IT dependent services in general.

Unpredictable and stringent NBE directives have been issued from time to time which have a significant impact in the performance of commercial Banks in Ethiopia. For instance, currently, NBE banned one of the services, which United Bank Ethiopia used to render, prepaid mobile top up. These kinds of unpredicted directives are challenges for the commercial banks of Ethiopia. Though many researches have been conducted on the impact of Information Technology on commercial banks' performance over the globe, still a limited number of studies have been conducted on Ethiopian commercial banks. Therefore, the study tried to investigate the impact of IT on the performance of commercial banks in Ethiopia by adopting the following objectives:

1. To examine the impact of IT on customers' satisfaction.
2. To identify the influence of IT on the job performance of commercial bank employees.
3. To offer valuable suggestions that could help improve the provision of IT based services by commercial banks in Ethiopia.

RESEARCH METHODS

The study can generally be considered as a cross-sectional survey on the impact of IT on the performance of two commercial banks in Ethiopia. Two cross-sectional surveys were conducted to examine the views of both customers and employees of the banks regarding the way in which IT has affected their satisfaction and performance respectively. Moreover, for the purpose of providing an adequate depiction of links and processes that surround the subject matter, the data from the survey were triangulated with data collected using the other basically qualitative methods of data collection like in-

depth interviews and documentary analysis. Figure 1 summarizes the conceptual framework behind the survey design.

Study area

The study was conducted on Bench Maji Zone, Mizan-Aman town. Bench Maji Zone is found in Southern Nations, Nationalities and Peoples Region (SNNPR), Southwestern Ethiopia. It is found at a distance of about 561 km from Addis Ababa and 842 km from the regional capital Hawassa.

Dashen Bank is a private commercial bank established in 1995. Headquartered in Addis Ababa, the Bank is the biggest private Bank in Ethiopia and operates through a network of 196 branches, nine dedicated Forex Bureaus, 220 ATMs and 958 plus Point-of-Sale (POS) terminals spread across the nation. It has established correspondent banking relationship with 464 banks covering 71 countries and 175 cities across the world. The Bank also works in partnership with leading brands in the electronic payments industry (American Express, VISA, MasterCard and UnionPay cards) and prominent money transfer (Dashen Bank, 2016).

United Bank, on the other hand, was incorporated as a Share Company on 10 September, 1998 in accordance with the Commercial Code of Ethiopia of 1960 and the Licensing and Supervision of Banking Business Proclamation No. 84/1994. The Bank obtained a banking services license from the National Bank of Ethiopia and is registered with the Trade, Industry and Tourism Bureau of the Addis Ababa City Administration. Over the years, United Bank built itself into a progressive and modern banking institution. Today, United Bank is a full service Bank that offers its customers a wide range of commercial banking services with a network of 161 branches and 25 sub-branches, and a number of additional outlets on the pipeline (United Bank, 2015).

Study population

According to data obtained from the Mizan-Aman branches of Dashen and United Banks, the two banks have 7050 and 4396 customers respectively. The total number of employees was also reported to be 21 for Dashen Bank and 25 for United Bank. Of the 21 employees in Dashen Bank, 6 are window clerks, 4 are manager/supervisors and 11 are manual workers. Similarly, of the 25 employees in United Bank, 8 are window clerks, 6 are managers/supervisors and 11 are manual workers.

Sampling techniques

In principle, accurate information about a given population could be obtained only from a census study. However, due to financial and time constraints, in many cases a complete coverage of a population is not possible. Thus, sampling is one of the methods, which allows the researcher to study a relatively smaller number of units representing the whole population (Sarantakos, 1998). Accordingly, the study employed simple random sampling technique to select its respondents. It used the following formula to calculate the sample size for bank customers who participated in the investigation.

$$n = \frac{Z_{\alpha/2}^2 [p(1-p)]}{e^2 + \frac{Z_{\alpha/2}^2 [p(1-p)]}{N}}$$

Where, n = Sample size;

Z $\alpha/2$ = Critical value from the normal distribution with level of

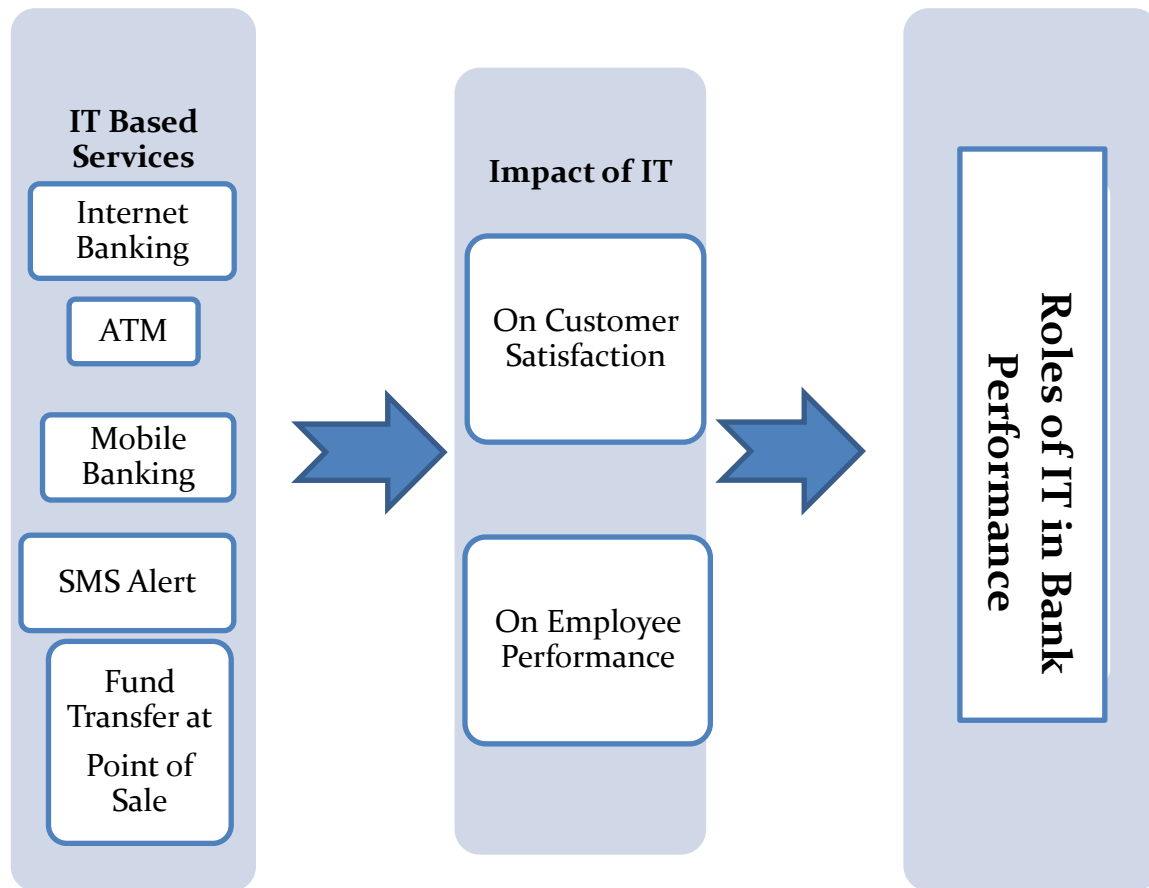


Figure 1. Conceptual framework.
Source: Developed by the researchers (2017).

significance equal to α
 e^2 = Margin of error at 5% $(0.05)^2$
 N = Total number of customers;
 p = Proportion of customers who use IT based services.

Therefore, the total sample size for customers will be: $n = 372$.

Methods of data collection

Primary data collection methods

Survey: Most of the primary data for the study was collected using the survey method. The method employed two structured questionnaires containing close-ended questions and was used to gather responses from both the customers and employees of the two banks. The questionnaires were designed in such a way that they enable the researchers to assess the impact of IT on customer satisfaction, employee performance and bank revenue.

In-depth interviews: In-depth interviews were conducted with key informants who were capable of providing richer and detailed information about the impact of IT on the performance of the two selected banks. Moreover, in-depth interviews were also conducted with bank officials including bank managers and system administrators. The results of the in-depth interviews were used to

weigh responses gathered from the survey.

Observation: This involves information canvassed through the personal observation of the researchers on situations related to the topic at hand.

Secondary data collection methods

Data sets: Secondary materials containing data on IT investment, bank profitability and annual performance were reviewed.

Works of others: In addition to reanalyzing data sets, the researchers also made use of published or unpublished reports and statistics found in different organizations. Major among such documents were studies conducted by various individuals at different periods in time.

RESULTS

In terms of their socio-demographic background, the majority of customers who participated in the study were males [251(67.5%)], married [215(57.8%)], were between the ages of 18 and 29 [206(55.4%)], on average earn

Table 1. Sampling design.

S/N	Name of banks	Name of branches	Total no. of customers	Sample size	Total no. of employees	Sample size
1	Dashen Bank	Mizan-Aman	7050	231	21	10
2	United Bank	Mizan-Aman	4396	141	25	14
Total			11446	372	46	24

Table 2. Reliability and scale statistics.

Reliability statistics			
<i>Cronbach's alpha</i>	<i>Cronbach's alpha based on standardized items</i>	<i>No. of items</i>	
0.743	0.766	20	
Scale statistics			
<i>Mean</i>	<i>Variance</i>	<i>Standard deviation</i>	<i>No. of items</i>
70.64	102.685	10.133	20

more than 3999 ETB per month [80%], have a bachelor degree [206(55.4%)] and were civil servants [112(30.1%)]. Whereas the majority of employee respondents for the study were males [16(66.7%)], single [13(54.2%)], were between 18 and 29 years old [16(66.7%)], have a bachelor degree [24(100%)] and earn an average monthly income which is greater than 5999 ETB [62.50%] (Table 1).

Impact of IT on customer satisfaction

In addition to the need to establish an efficient and sustainable business management system, another major reason for why firms adopt IT is to enhance the quality of the services they provide to their customers. As a result, nowadays the primary force behind the penetration of IT into the banking industry is the question of customer satisfaction. It was also for this reason that the study attempted to investigate the impact of IT on the performance of commercial banks in Ethiopia through an assessment on customer satisfaction.

To do so, the study used a self-filled structured questionnaire that contains a scale with 22 items intended to measure customer satisfaction. Respondents were asked to express their degree of agreement or disagreement with the idea contained within each item on the scale. The items contained a series of statements concerning IT based services and the responses ranged from strongly disagree to strongly agree with disagree, neutral and agree as the three intermediate responses. The scores for the responses were 1 strongly disagree, 2 disagree, 3 neutral, 4 agree and 5 strongly agree (Tables 3 to 5). Reverse scoring was used for items that contained unfavorable statements.

Moreover, the reliability of the scale was tested using Cronbach's test of reliability. The test indicated that, if two of the items on the scale concerning the fairness of service charges and legal agreements are removed, 74.3% of the variance in the scores for the remaining 20 items is reliable variance. Consequently, the Cronbach's alpha based on the scores for 20 standardized items was found to be 0.766, which is commonly assumed to be an acceptable degree of reliability by most researchers. Table 2 above summarizes the output from the reliability test done on the scale.

Although respondents were allowed to provide multiple responses to the question none of them reported to have used more than one IT based service. Consequently, the least used IT based service was found to be electronic fund transfer (4(1.1%)) [3(0.8%) DB and 1(0.3%) UB]. This could be because of the fact that the service by nature requires the existence of two or more agents who conduct their transactions electronically. One major conclusion that could be made from the findings presented in the table is that IT based services are often used by respondents mainly for the purpose of accessing and monitoring their own bank accounts. Another finding of the study in this regard is that internet banking has become a common service utilized by bank customers. It was found to be a service utilized by 21(5.6%) [13(3.5%) DB and 8(2.2%) UB] of the respondents. Although the proportion of its users is smaller by comparison, the finding appears to be interesting given the newness of the service in the Ethiopian banking industry. Moreover, the data show that SMS alerts, although not as new as internet banking, are becoming one of the basic mechanisms through which banks provide notifications to their customers. According to the data, 31(8.3%) [15(4.0%) DB and 16(4.3%) UB] of the respondents

Table 3. Respondent's confidence in using IT based services by banks.

Bank name x respondents confidence in using IT based services								
I feel confident to use technology based products of the bank			Respondents confidence in using IT based services					Total
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Bank Name	Dashed Bank	Count	21	40	26	50	94	231
		% of Total	5.6	10.8	7.0	13.4	25.3	62.1%
Bank Name	United Bank	Count	8	18	14	47	54	141
		% of Total	2.2	4.8	3.8	12.6	14.5	37.9%
Total		Count	29	58	40	97	148	372
		% of Total	7.8%	15.6	10.8	26.1	39.8	100.0

Source: Survey (2017).

Table 4. Impact of IT on workload, speed of service delivery and decision making by banks.

			Impact of IT on workload				Total
			Strongly disagree	Disagree	Agree	Strongly agree	
Bank Name	Dashed Bank	Count	0	0	7	3	10
		% of total	0.0	0.0	29.2	12.5	41.7
Bank Name	United Bank	Count	1	0	2	11	14
		% of Total	4.2	0.0	8.3	45.8	58.3%
Total		Count	1	0	9	14	24
		% of Total	4.2	0.0	37.5	58.3	100.0

			Impact of IT on speed of service delivery				Total
			Strongly disagree	Disagree	Agree	Strongly agree	
Bank Name	Dashed Bank	Count	0	1	7	2	10
		% of Total	0.0	4.2	29.2	8.3	41.7%
Bank Name	United Bank	Count	1	0	6	7	14
		% of Total	4.2	0.0	25.0	29.2	58.3%
Total		Count	1	1	13	9	24
		% of Total	4.2%	4.2	54.2	37.5	100.0

			Impact of IT on decision making				Total
			Strongly disagree	Disagree	Agree	Strongly agree	
Bank Name	Dashed Bank	Count	0	0	9	1	10
		% of Total	0.0	0.0	37.5	4.2	41.7%
Bank Name	United Bank	Count	1	0	6	7	14
		% of Total	4.2	0.0	25.0	29.2	58.3%
Total		Count	1	0	15	8	24
		% of Total	4.2	0.0	62.5	33.3	100.0

Source: Survey (2017).

reported to have used SMS alert as a means of obtaining updates from their respective banks.

United Bank was the first private commercial bank in the area and Dashed Bank is relatively new to the Mizan-Aman market. However, despite its late arrival in the area, Dashed Bank has grown to be a formidable

competitor since it has now surpassed United Bank in its number of customers. As can be seen from a description of the study population, United Bank which was a pioneer of private banking in the area, currently has only 4396 customers while Dashed Bank has 7050. This could be mainly because of Dashed Bank's effective marketing

Table 5. Impact of IT on service accuracy and quality of work by banks.

			The Impact of IT on service accuracy					Total
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Bank name	Dashen Bank	Count	0	2	1	6	1	10
		% of Total	0.0	8.3	4.2	25.0	4.2	41.7%
Bank name	United Bank	Count	1	0	1	8	4	14
		% of Total	4.2	0.0	4.2	33.3	16.7	58.3%
Total		Count	1	2	2	14	5	24
		% of Total	4.2%	8.3	8.3	58.3	20.8	100.0
			Impact of IT on the quality of work					Total
			Strongly disagree	Disagree	Neutral	Agree	Strongly agree	
Bank name	Dashen Bank	Count	0	0	0	7	3	10
		% of Total	0.0	0.0	0.0	29.2	12.5	41.7%
Bank name	United Bank	Count	1	0	0	7	6	14
		% of Total	4.2	0.0	0.0	29.2	25.0	58.3%
Total		Count	1	0	0	14	9	24
		% of Total	4.2%	0.0	0.0	58.3	37.5	100.0

Source: Survey (2017).

strategies and innovative use of IT.

Accessibility and convenience of IT based services

As far as customer satisfaction is concerned, the basic installation of IT into the structure of a banking institution is only half the required task. The institution also has to make its IT based services accessible and convenient to its customers. Unless this is done, the introduction of IT could do more harm to the overall operation of the bank than good. Inaccessible and inconvenient IT based services could potentially push customers away from a bank than attract more customers or increase the satisfaction of steady customers. Therefore, the question is not simply about whether or not a bank has integrated IT into its system but whether or not it has made its IT based services accessible and convenient to its customers.

Accordingly, the majority (145(39.0%)) [78(21.0%) DB and 67(18.0%) UB] agreed to the statement "The bank's technology based services are always available" followed by 108(29.0%) [84(22.6%) DB and 24(6.5%) UB] respondents who reported to strongly agree with the same item. Meanwhile, 74(19.9%) [41(11.0%) DB and 33(8.9%) UB] said they disagreed, 29(7.8%) [18(4.8%) DB and 11(3.0%) UB] said they strongly disagreed and the rest 16(4.3%) [10(2.7%) DB and 6(1.6%) UB] preferred to be neutral on the subject. In addition, the median score and the mode for the item was found to be 4.00, further suggesting a general agreement on the regular availability of IT based services by the banks.

Moreover, there is also ample evidence in the data to

suggest that most of the respondents who found the IT based services user friendly do so because the services allow them to transfer money to and from other commercial banks. According to the data, there is a statistically significant correlation between the overall user-friendliness of IT based services and their capability to transfer money to and from other commercial banks. The scores for the two items reveal that they have a Kendall's tau_b correlation coefficient of 0.165 which is significant at $\alpha = 0.001$.

Reliability of IT based services

As part of its attempt to evaluate the impact of IT on customer satisfaction, the study also tried to measure to what extent customers find the IT based services of the two banks reliable. It strived to do so by assessing how confident customers felt in using IT based services, how trustworthy customers found the IT based services, the impact of network and power fluctuations on IT based services, the guarantee provided by banks in case of losses from IT related transactions, IT security and secrecy of user passwords and the accuracy and timeliness of information obtained from IT based services.

Consequently, 148(39.8%) [94(25.3%) DB and 54(14.5%) UB] reported that they feel highly confident in using IT based services while the second majority of the respondents (97(26.1)) [50(13.4%) DB and 47(12.6%) UB] felt sufficiently confident to use the services. Although these groups of respondents represent a significant majority, it also seems important to mention that 87(23.4%)

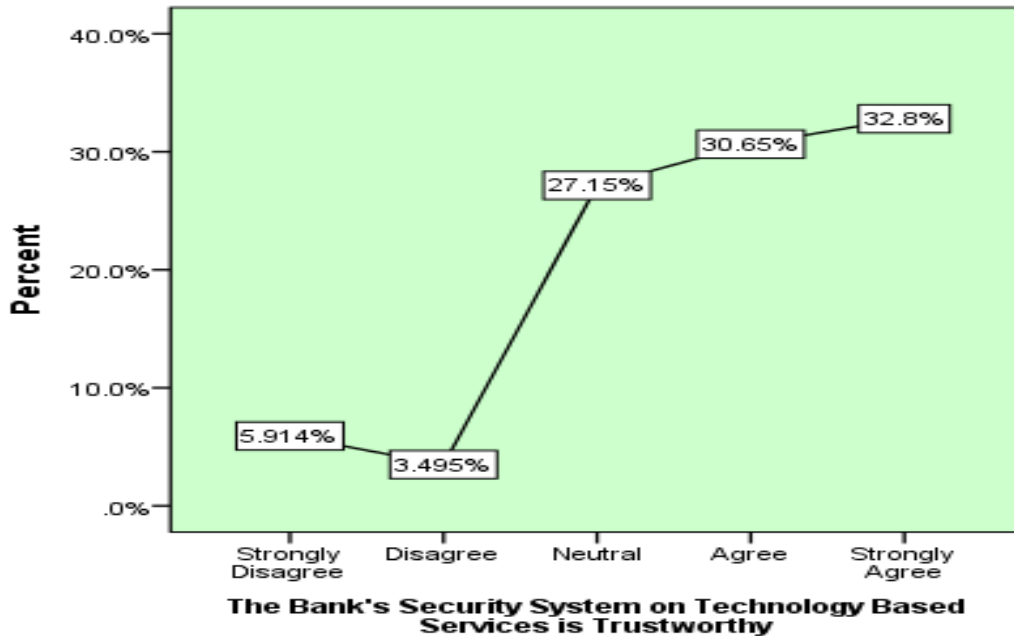


Figure 2. Trustworthiness of IT based services.
Source: Survey (2017).

customers in fact felt either unconfident or strongly unconfident about using IT based services. This is hard to overlook because confidence in services is a very crucial component of customer satisfaction.

The data also show that network and power fluctuations negatively affect the reliability of IT based services. This is so not only for the reliability of the services but also their convenience. According to the data, 123(33.1%) of the respondents thought that power fluctuations greatly affected the banks' IT based services while 129(34.7%) of them thought that they are highly affected by broadband network fluctuations. In addition, 140(37.6%) respondents basically agreed that the banks' IT based services are mostly affected by power fluctuations whereas 118(31.7%) agreed that it was broadband network instability that mostly affected the services. This shows that of the 372 respondents sampled for the study, a total of 263(70.7%) of them reported that electric power fluxes had a negative impact on IT based services while a total of 247(66.4%) respondents stated that broadband network variations do have a negative effect on the services. This indicates that power and broadband network fluctuations stand at the top of all the factors that could negatively affect IT based services. However, this could be partially attributed to the fact that the study was conducted in Mizan-Aman town which is known to suffer from unusually recurrent power shortages and network cuts.

In relation to reliability, as regards the statement "The bank's security system on technology based services is trustworthy", the majority of the respondents (122(32.8%))

[82(22.0%) DB and 40(10.8%) UB] strongly agreed that the services are in fact trustworthy whereas 144(30.6%) [64(17.2%) DB and 50(13.4%) UB] simply agreed to the statement. The mode for this particular variable was 5.00 again indicating a strong agreement while the median is 4.00 also implying a general agreement on the trustworthiness of IT based services (Figure 2) provided by the banks.

IT maintenance efficiency

Despite its complex algorithms and procedures, malfunction is a common feature of IT products. Similarly, the IT based services provided by the banking industry also face glitches that range from minor to systemic. As a result, the study attempted to investigate the impact of IT malfunction on customer satisfaction as well as the IT maintenance efficiency of the selected banks starting with the operational competence of the banks' IT products.

First among these products are ATMs which provide direct services to customers. According to the data, the majority of the respondents (98(26.3%) [60(16.1%) DB and 38(10.2%) UB]) disagreed that the ATMs of the two banks are always functional while 37(9.9%) [19(5.1%) DB and 18(4.8%) UB] strongly disagreed to the fact (Figure 3). This shows that the two banks suffer from a strong efficiency problem in relation to their ATM operations. Although this is the case with the efficiency of ATMs, the larger majority of the customers (152(40.9%) [102(27.4%)

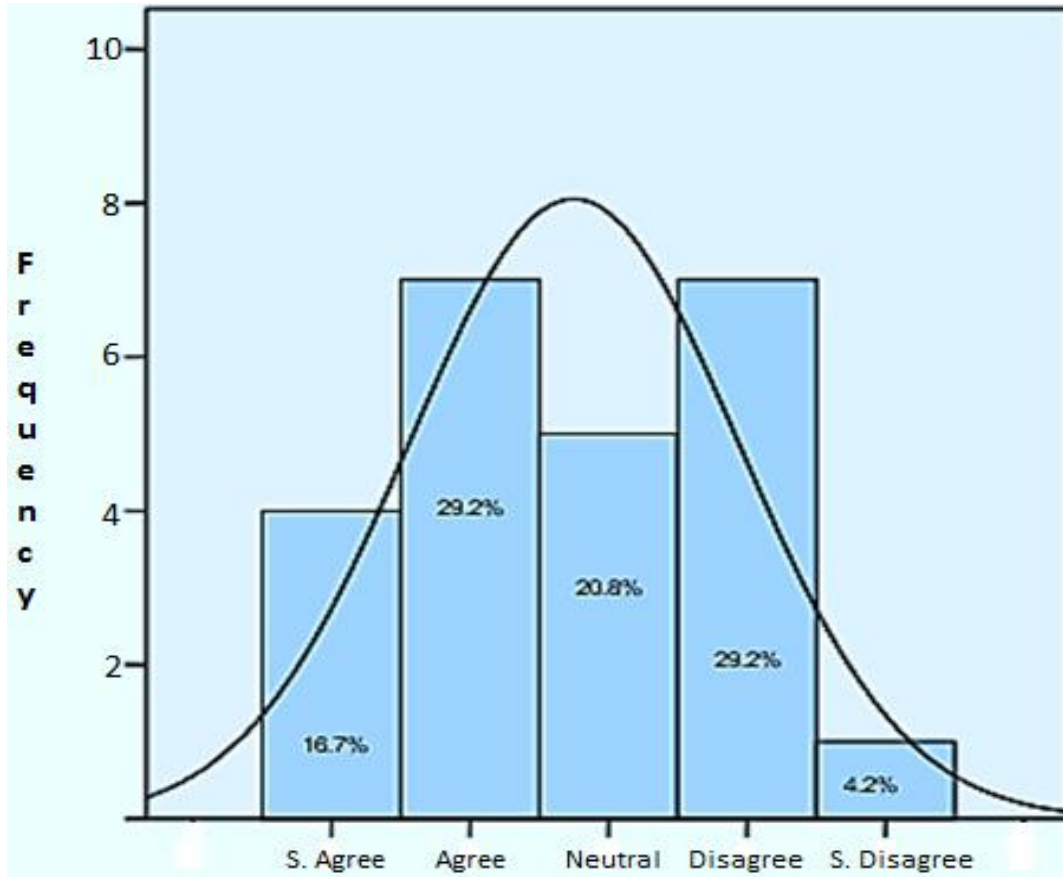


Figure 3. IT and its likelihood to create a culture of dependency among employees.
Source: Survey (2017).

DB and 50(13.4%) UB]) strongly agreed that the accuracy of the banks' technology based services is always flawless whereas another significant segment of the customers (101(27.2%) [68(18.3%) DB and 33(8.9%) UB]) agreed to the statement.

From the two findings presented above, it is possible to conclude that even if the banks' IT based services have an efficiency problem they do have a notable level of accuracy which could considerably increase their reliability. In fact a correlation test between the scores for the accuracy of IT based services and respondents' level of confidence in using the services indicates that there is actually a statistically significant correlation. The accuracy of IT based services and respondents' confidence in using them have a positive correlation of 0.541 which is statistically significant at $\alpha = 0.01$.

In addition, the accuracy of IT based services and the efficiency of ATMs also have a significant correlation with the banks' quickness in solving IT related problems and ATM malfunctions respectively. According to the data, the accuracy of IT based services has a positive correlation with quickness of response to fixing IT products by a correlation coefficient of 0.570 which is statistically

significant at $\alpha = 0.01$. Likewise, the efficiency of ATMs has a positive correlation with quickness of responses to solve ATM malfunctions by a correlation coefficient 0.170 which is also statistically significant at $\alpha = 0.01$. This indicates that both the accuracy of the banks' IT based services and the efficiency of their ATMs have a lot to do with their swiftness in resolving IT related malfunctions.

Impact of IT on employee performance

Prior the tuning of IT for the purpose of improving customer satisfaction, the central reason behind the introduction of IT into business world is to enhance the competitiveness of firms through upgrading work flow and employee performance. IT has proved to have a substantial impact on the smoothness of company operations as well as the workload and accuracy of employees. To assess whether this is the case in the two banks selected for the study, the research endeavored to examine the impact of IT on the load and accuracy of work among bank employees. The study also attempted to see if there are any drawbacks associated with the

introduction of IT into the two banks.

Impact of IT on workload

The findings of the study indicate that of the 24 employees working in the two banks, 14(58.3%) [3(12.5%) DB and 11(45.8%) UB] strongly agreed, 9(37.5%) [7(29.2%) DB and 2(8.3%) UB] simply agreed while only 1(4.2%) employee of UB strongly disagreed that IT has minimized their workload. This is not surprising because instead of being overwhelmed by a lot of paperwork, the institution of IT into the banks has enabled the employees to perform most of their work digitally using comprehensive banking software. Deposits and withdrawals only involve a few clicks on the computer and periodic transactions are updated automatically. Employees are no longer required to manually count the paper money they transact with customers and the genuineness of foreign money notes could be checked using an easy-to-use electronic device. All of this of course takes a great weight off the workload of bank employees.

Moreover, IT has also improved the speed of service delivery by the banks. Based on the data, more than half of the employees (13(54.2%) [7(29.2%) DB and 6(25.0%) UB]) agreed that IT has enabled them to serve their customers quickly and without any delay while 9(37.5%) [2(8.3%) DB and 7(29.2%) UB] agreed to the fact. This is also something related to what has been already stated above. The promptness of computer software and other IT products in processing information undeniably reduces the amount of time required to serve customers. Correspondingly, IT has not only reduced the workload of employees and improved the speed of their service delivery, but it also has a positive impact on the decision making capacity of bank officials. A significant majority of the respondents (15(62.5%) [9(37.5%) DB and 6(25.0%) UB]) strongly agreed that they believe IT positively helps their managers to make better decisions. As for the rest of the employees 8(33.3%) [1(4.2%) DB and 7(29.2%) UB] strongly agreed, whereas only 1(4.2%) employee of United Bank strongly disagreed. This is so because IT allows bank managers to screen information quickly and search the proper course of action. They could easily check the transaction records of tellers, review their financial history and pinpoint the sources of faulty transactions if any.

In addition, differences in the impact of IT on the workload and speed of service delivery of separate gender and age groups have also been observed. A Kendall's tau_b correlation points out that the gender and ages of respondents are negatively correlated with the impact of IT on workload. The test shows that both variables are negatively correlated with the impact of IT on workload with a correlation coefficient of -0.492 which is statistically significant at $\alpha = 0.05$. From this finding it is possible to say that IT has a more substantial impact on

the workload of men and employees between the ages of 18 and 29 than on that of women and employees between the ages of 30 and 39.

Impact of IT on work accuracy

Studies over the years have shown that IT not only reduces the workload of employees but also highly increases their accuracy. Since most of the information is processed electronically, the only sectors often prone for user errors are data entry and output interpretation. Consequently, more than half (14(58.3%) [6(25.0%) DB and 8(33.3%) UB]) of the employees included in the study agreed and another 5(20.8%) [1(4.2%) DB and 4(16.7%) UB] strongly agreed that IT has in fact improved their work accuracy. Observation also shows that compared to the way bank operations would have been conducted without it, there is no question that IT has a paramount positive impact on service accuracy.

While the findings presented above were tabulated from responses to the statement "Information Technology increases employees' accuracy," as a way of cross checking the validity of the responses employees were asked to respond to the statement "Working with technology based products makes employees commit much more mistakes than manual work." Results indicate that 14(58.3%) [6(25.0%) DB and 8(33.3%) UB] employees disagreed and another 5(20.8%) [1(4.2%) DB and 4(16.7%) UB] strongly disagreed that IT products make employees commit much more mistakes than manual work. Since the same number of respondents affirmed the positive impact of IT on work accuracy, it is possible to conclude that the responses obtained for the two items on work accuracy were genuine.

Moreover, in relation to the impact of IT on the quality of work respondents were asked to express their stand to the statement "Information Technology helps employees to deliver their job according to the bank's standard" to which the majority (14(58.3%) [7(29.2%) DB and 7(29.2%) UB]) agreed while (9(37.5%) [3(12.5%) DB and 6(25.0%) UB]) strongly agreed. Only 1(4.2%) employee from united bank disagreed.

This point out that IT has not only enabled employees to improve their work accuracy but also has allowed them to work up to the standard of their organization. This might be because of the fact that the standard of work in the banks is closely tied more to the system software than to employees' individual capacity. It could be said that the major difference in the quality of work performed by the employees emanates from the speed of service delivery than from the actual precision with which they accomplish their tasks.

Drawbacks associated with IT based services

Although it has fetched a lot of positive results for the

banking world, IT has also brought with it a number of problems. Unexpected glitches in system software, dependency on broadband networks, faulty digital transactions, hacking, etc. are among the many problems that have surfaced alongside the institution of IT based banking services. For the purpose of examining possible drawbacks associated with the introduction of IT into Dashen and United banks, the study attempted to explore the fact in relation to IT adoption difficulties among employees, the direct relationship between IT and electric power/broadband network as well as the likelihood of IT to create a culture of technology dependency among employees.

To begin with, the data showed that a larger portion of the employees who participated in the study have found new technology based products difficult to adopt. To the statement "New technology based products are difficult to adapt with", 7(29.2%) [4(16.7%) DB and 3(12.5%) UB] of the respondents answered "agree" while 3(12.5%) [1(4.2%) DB and 2(8.3%) UB] strongly agreed. Additionally, 6(25.0%) of the respondents disagreed to the same statement, another 6(25.0%) respondents remained neutral, whereas the rest 2(8.3%) [1(4.2%) DB and 1(4.2%) UB] strongly disagreed. This finding indicates that one potential problem associated with the introduction of IT into commercial banks is the issue of technology adoption. With all the compounded tasks they are expected to perform, recent IT based banking products tend to have complex command procedures which are not so easy to learn. This in turn could possibly present a great deal of disarray to the periodic flow of work in the banks.

Furthermore, as with the greater part of customers surveyed for the study, the majority of employees in the two selected banks strongly agreed that power and network fluctuations negatively affect IT based services, thus their job performance as employees. According to the data, of the 24 employee respondents of the study, 13(54.2%) [6(25.0%) DB and 7(29.2%) UB] strongly agreed that electric power and broadband network disruptions negatively affect technology based products of the banks, which in return affects the performance of employees. 4(16.7%) [2(8.3%) DB and 2(8.3%) UB] agreed, 3(12.5%) all from United Bank disagreed, 2(8.3%), one from each bank strongly disagreed while the same percentage of employees from both banks preferred to stay neutral on the matter. This stands to show that power and network fluctuations are among the most critical problems that adversely impact the job performance of employees in the selected commercial banks. Besides, as earlier discussed in this paper, the same problem also significantly affects the convenience as well as reliability of the IT based services provided by the two banks.

Although tasks performed through IT products appears to be simple and monotonous, bank employees are required to be qualified experts in banking and finance.

They need to constantly upgrade their expert knowledge by drawing on their practical experiences on the job. To assess whether IT based service delivery hampers employees from upgrading their banking knowledge, respondents of the study were asked to state their stance on the statement "Information Technology does not let employees to upgrade their banking knowledge, since they are dependent on the system."

As depicted in the histogram above, although the size of respondents who agreed and disagreed with the given statement is equal at 7(29.2%), the overall response tally leans towards the agree side. This is so because 4(16.7%) [1(4.2%) DB and 3(12.5%) UB] have strongly agreed while only 1(4.2%) respondent from United Bank strongly disagreed with the fact and 5(20.8%) all of them again from United Bank remained neutral. From this, it is possible to deduce that although the introduction of IT based service delivery initially exposes employees to a new way of performing financial dealings, once that happens they have little chance of upgrading their banking knowledge. This could be because being perpetually preoccupied with utilizing the same system software for a lengthy period of time discourages employees from seeking further professional development.

Summary

As have been presented, the study on the impact of IT on the performance of commercial banks was done based on empirical analyses of both primary and secondary data. Subsequently, the analysis and interpretation of the data has conveyed the following major findings:

1. It is possible to conclude with a 99% level of confidence that customers who were satisfied with the availability of IT based services also found the IT based services of the banks to be convenient, speedy, user-friendly and efficient in update notifications.
2. There is a statistically significant positive correlation (0.673 significant at $\alpha = 0.01$) between the accessibility of IT based services and their convenience to customers.
3. There is a statistically significant positive correlation (0.393 significant at $\alpha = 0.01$) between the speed of IT based services and their convenience to customers.
4. There is a statistically significant positive correlation (0.185 significant at $\alpha = 0.01$) between overall user-friendliness of IT based services and user-friendliness of services in terms of language options.
5. There is a statistically significant positive correlation (0.165 significant at $\alpha = 0.01$) between the overall user-friendliness of IT based services and their capability to transfer money to and from other commercial banks.
6. Electric power and broadband network fluctuations stand at the top of all the factors that negatively affect IT based services.

7. The accuracy of IT based services and customers' confidence in using them have a positive correlation of 0.541 which is statistically significant at $\alpha = 0.01$.

8. The accuracy of IT based services has a positive correlation with quickness of response to fixing IT products by a correlation coefficient 0.570 which is statistically significant at $\alpha = 0.01$.

9. The efficiency of ATMs has a positive correlation with quickness of responses to solve ATM malfunctions by a correlation coefficient 0.170 which is also statistically significant at $\alpha = 0.01$.

10. Differences in the impact of IT on the workload and speed of service delivery of separate gender and age groups have also been observed. IT has a more substantial impact on the workload of men and employees between the ages of 18 and 29 than on that of women and employees between the ages of 30 and 39.

11. IT has not only enabled employees improve their work accuracy but also has allowed them to work up to the standard of their organization.

12. One eventual problem associated with the introduction of IT into commercial banks is the issue of technology adoption. Complex software command procedures which are not so easy to learn present a great deal of disarray to the smooth flow of work in the banks.

13. Electric power and broadband network fluctuations are among the most critical problems that adversely impact the job performance of employees in the selected commercial banks.

14. The introduction of IT could create a culture of technology dependency among employees.

15. IT based services constituted a significant percent of the banks' gross profit for both 2015 and 2016 fiscal years. They comprised 25.10% of the banks' gross annual profit in 2015 while they accounted for 26.07% of the combined annual profit in 2016.

Conclusion

IT is among the central features of modern society and has become an unavoidable element of living in the modern world. Education, politics as well as the market in contemporary society all involve a certain degree of dependence on IT. The market in particular is becoming highly reliant on the use of IT. Electronic trading is currently a necessary part of international business transaction and the banking industry in almost all countries is now IT dependent. This is also the case when it comes to countries like Ethiopia. Both public and private banks in the country are regularly using IT to carry out their financial dealings. The current study attempted to investigate the impact of IT on the performance of private commercial banks in Ethiopia through an analysis of facts pertaining to the Mizan-Aman branches of Dashen and United Banks.

Consequently, an overview of the mission and values of the two banks indicates that the mission statements of both banks acknowledge the undeniable usefulness of IT for banking success and their values reflect the need to constantly improve customer satisfaction in order to secure continued institutional survival. Although both banks aim to use 'appropriate' or 'state-of-the-art' technology, Dashen Bank clearly appears to be determined to excel in the provision of not only domestic but also international banking services. While Dashen Bank appears to have a more determined focus on efficiency and excellence, United Bank seems to aim at enhancing the value of shareholders and the wellbeing of its employees. Dashen Bank also appears to be more business oriented and strongly geared towards long term institutional stability and growth while United Bank seems to focus more on its social and corporate responsibilities towards its employees and the country at large. However, aside from the above mentioned differences, the two banks indeed provide due attention to both IT and customer satisfaction.

Additionally, a quantitative analysis of data obtained from customer of the two banks have indicated that customers generally found the IT based services of both banks to be convenient, reliable, speedy, as well as user-friendly. However, electric power and broadband network fluctuations were identified as the primary factors that significantly affect IT based services of both banks. The negative impact of these factors was found to be particularly severe because the study was conducted in Mizan-Aman town which is known to suffer from unusually recurrent power shortages and network cuts. Nevertheless, even if the banks' IT based services have an efficiency problem that has largely attributed to the aforementioned factors, they do have a notable level of accuracy which noticeably increases their reliability.

The study has also revealed that IT has a positive impact on job performance by reducing the workload of bank employees. This is not surprising because of the fact that instead of being overwhelmed by a lot of paperwork the institution of IT into the banks has enabled the employees to perform most of their work digitally using comprehensive banking software. Deposits and withdrawals only involve a few clicks on the computer and periodic transactions are updated automatically. Employees are no longer required to manually count the paper money they transact with customers and the genuineness of foreign money notes could be checked using an easy-to-use electronic device. All of this, of course, takes a great weight off the workload of bank employees.

In addition, IT has not only enabled employees improve their work accuracy but has also allowed them to work up to the standard of their organization. This might be because of the fact that the standard of work in the banks is closely tied to the system software than to employees' individual capacity. It could be said that the major

difference in the quality of work performed by the employees emanates from the speed of service delivery than from the actual precision with which they accomplish their tasks. Moreover, the findings of the study indicate that one potential problem associated with the introduction of IT into commercial banks is the issue of technology adoption. With all the compounded tasks they are expected to perform, recent IT based banking products tend to have complex command procedures which are not so easy to learn. This in turn could possibly present a great deal of disarray to the periodic flow of work in the banks.

Furthermore, the study has shown that the introduction of IT into commercial banks tends to create a culture of dependency among bank employees. Although the introduction of IT based service delivery initially exposes employees to a new way of performing financial dealings, after that happens they have little chance of upgrading their banking knowledge. This is so because being perpetually preoccupied with utilizing the same system software for a lengthy period of time discourages employees from gaining professional development. Finally, a brief analysis of the financial impact of IT on the two banks has shown that IT based services constituted a significant percent of the banks' gross profit for 2015 and 2016 fiscal years.

Generally, the study has shown that IT indeed has a positive impact on the performance of private commercial banks. It has revealed that if utilized properly, IT could significantly enhance overall bank performance by way of improving customer satisfaction, reducing workload, increasing work accuracy as well as by availing new sources of bank revenue.

ABBREVIATIONS

ATM, Automated Teller Machines; **CSA**, Central Statistical Agency; **DB**, Dashen Bank; **EPRDF**, Ethiopian People Revolutionary Democratic Front; **ETB**, Ethiopian Birr; **FY**, Fiscal Year; **ICT**, Information Communication Technology; **IT**, Information Technology; **NBE**, National Bank of Ethiopia; **PIN**, Personal Identification Number; **POS**, Point of Sales; **SMS**, Short Messaging Service; **SNNPR**, Southern Nations, Nationalities and Peoples Region; **UB**, United Bank.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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