

THE ROLE OF E-BANKING IN REDUCING TRANSPORT COSTS: A CASE STUDY OF HARARE

L. MAUNGANIDZE, E. MADZUDZO*, T. MBARA* and M. NYARIRANGWE**

Graduated in the Department of Rural and Urban Planning in 2007, University of Zimbabwe
*Lecturers in the Department of Rural and Urban Planning, University of Zimbabwe, P.O. Box
MP 167, Mount Pleasant, Harare, Zimbabwe.

**Lecturer, Civil Service College, Addis Ababa, Ethiopia

ABSTRACT

This paper explores the potential of ICTs in general and electronic banking in particular as strategies to reduce transportation costs in urban environments. The paper is derived from a study undertaken by the lead author in partial fulfillment to the Bachelor of Science in Rural and Urban Planning Degree at the University of Zimbabwe. The study, which was based on Harare, the capital city of Zimbabwe concluded that internet and mobile banking are currently not major delivery channels for Zimbabwean commercial banks' products and services but instead, ATMs and Electronic Funds Transfer at the Point of Sale (EFTPOS) are undoubtedly the most popular electronic delivery channels for banking services in the country. Although there are transportation cost benefits, the study showed that banking activities solely are not strong determinants of both travel demand and trip frequencies. Banking activities are normally done in conjunction with other trip purposes and therefore most people will still find the need to visit the CBD

1. BACKGROUND

Geyer (1997) noted that the trend towards electronic delivery of products and services is occurring dramatically in the financial service industry worldwide. According to Guermazi *et al* (2005) this phenomenon is increasingly becoming a driving force of the global economy. In addition, it also offers the potential for economic development, promising increased productivity (energy productivity included) and enhanced access to the global market.

In Sub-Saharan Africa (SSA), there is an interest in exploiting ICTs in all sectors, including the financial sector. In the economic sphere, the interest in ICTs is particularly inspired by the belief that they are increasingly essential for the efficient use of resources in general (Adeya, 2001). However, the development of the phenomenon has been slow due to constraints such as lack of infrastructure; financial constraints; lack of sufficient skilled personnel and lack of national ICT policies, to mention but a few (Odedra-Straub *et al*, 1995).

Specific to Zimbabwe, Gono (2001) asserted that Zimbabwe's banking system is significantly well developed technologically, in comparison with other countries in Africa. In line with global trends, developments in ICTs have continued to set in motion an electronic revolution in the Zimbabwean banking sector. For instance, local banks have invested in research and development of new and advanced electronic delivery channels. The process began with the

introduction of ATMs and EFTPOS to a once manual banking industry in the late eighties (*Financial Gazette*, November 18, 2004).

In the quest for product and service differentiation, banks in Zimbabwe have invested in technologies convenient to their customers in terms of savings on time and transportation costs. Recently, banks have started investing in advanced delivery channels such as internet and mobile phone banking.

The latest service delivery channels allow for a broad range of remote transactions such as bill payments, balance enquiry, inter-bank transfer, to mention but a few. Relevant for the object of this paper, it is important to note that, e-banking also provides a payment system compatible with the promotion of an energy efficient city. Goldemberg et al. (2000) asserted that advanced technology is on average much more energy efficient than most technologies currently in use. This therefore means that Internet and mobile banking services are more energy efficient than the former ATMS and EFTPOS.

While it is acknowledged that there are diverse sources of energy, the study specifically focuses on energy consumption in travel and transportation. This is an important analysis because modeling of urban system indicates that the pattern of transport use is a major component of energy efficiency that is measurable (Vukovic, 1999). The authors however acknowledge that limiting the study to one form of energy has disadvantages in terms of the general applicability of results in recommending policies in the area of energy efficiency improvements in Zimbabwe.

2. CASE STUDY

2.1 Description of Study Area

Harare has experienced an unprecedented growth (spatially and population) over the years. Its annual population growth rate is approximately 7% (CSO, 2006). This population is reflected in the pressure for future expansion or growth of the city. The pressure is felt in the provision of more housing, socio-economic and public facilities. The historical growth of Harare has required progressive administrative changes as its expansion has consumed land adjacent to the city. Much of Harare's growth is due to its role as the capital and largest city of Zimbabwe. It is also a consequence of changing economic, political as well as government policies. The nature in which the city is expanding implies that there will be an increased dependence on the automobile and subsequently, wasteful energy use.

Harare has therefore been purposively selected because of her aforementioned capital city status, historical and demographic characteristics. The aim is to inquire on changes which may be brought about by e-banking in an urban setting such as Harare from the point of view of energy conservation.

2.2 Study Methodology

The research drew largely on interpretative non-statistical methods of inquiry and analysis. Data was collected using techniques such as scheduled interviews, questionnaires, observation, content analysis and anecdotal evidence. Triangulation of methods was used to study a single phenomenon to enhance the validity and reliability of data. The research methodology was therefore highly qualitative with some conventional quantitative approaches used to support the former insights. It made use of detailed descriptions from the perspectives of the respondents themselves as a means of examining specific issues and problems under

study.

3. STUDY FINDINGS

3.1 Service coverage and accessibility in the city of Harare

Twenty nine (29) out of 54 banks are located in the CBD. The remaining 25 are sparsely distributed in a few residential areas located close to the CBD, with the city outskirts largely remaining without banking services. In addition, the telecoms' customer service offices are desperately insufficient to cater for a city of more than 2.5 million inhabitants. For instance, mobile telephone service provider, Telecel, has only 2 customer service offices in the whole of Harare, both of which are located in the CBD. Furthermore, the other providers, Econet, NetOne and TelOne, have only 4 service offices each (with each having 2, 3 and 1 of the offices, respectively, located in the city center). However, the Zimbabwe Electricity Distribution Company (ZEDC) has district offices, fairly distributed citywide. ZEDC has 19 payment offices in Harare with only 2 located in the CBD. On the other hand, district offices are 25 in total, with all of them located in residential areas, with the exception of the main office in the city center.

As a consequence of the reduced access to services, the majority of Harare's residents are forced to frequently generate motorized trips to the CBD. The average trip length from residential areas to the CBD is approximately 12 kilometres. The long traveling distances, further compounded by the high frequency of motorized trips (particularly by those who leave on the city outskirts) entail increased fuel consumption. To compound the problem, fuel is not readily available and the majority of motorists buy it from the parallel market at exorbitant prices, thus making aggregate transportation costs very high.

3.2 Findings from the general public

This section presents findings obtained from a sample of thirty (30) carefully selected interviewees at 5 different service sectors which utilize e-banking services. This included telecoms, retail shops, Harare City Council, ZEDC and banks. The intention was to determine the means of transport used, the extent to which individuals are aware of and utilize e-banking facilities and consequently to identify the main areas in which e-banking has enhanced energy efficiency in Harare..

3.2.1 Modal Split

Figure 1 below shows the percentage modal split results obtained from respondents interviewed.

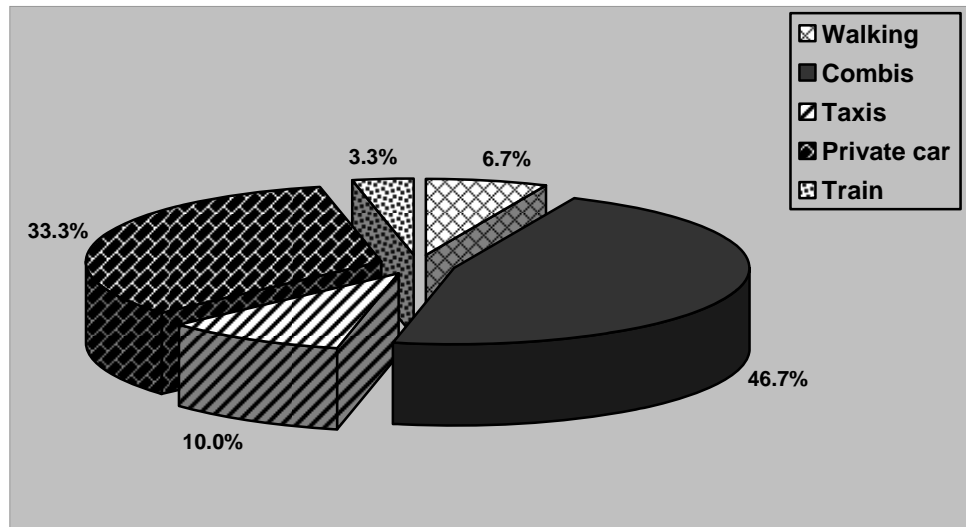


Figure 1 Transport modal split results for Harare

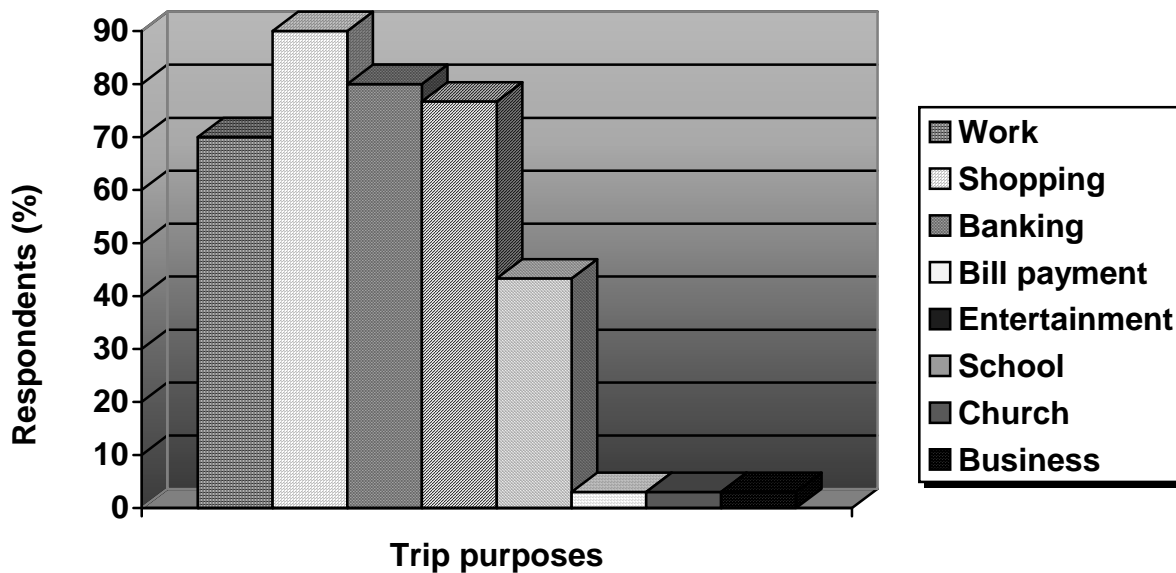
From figure 1, 60% make use of the public transport mode (i.e. combis, taxis and train), with 33.3% making use of their own private vehicles and only 6.7% preferably walking to the CBD. Pedestrian trips are made on shorter distances, primarily by people staying in the Avenues who only need to travel approximately 2km from their places of residence. On the other hand, motorized transport is largely used for longer trips. However, for motorized road based modes, public transport has a clear dominance over private transport.

3.2.2 Trip Purpose

Interviewee travel patterns were analysed in order to simulate travel demand in relation to trip purposes in general and banking in particular. Trip purpose was assumed to be a fundamental determinant of trip frequency and elasticity of demand for travel. The intention was to determine the likely effect of utilizing e-banking facilities (particularly by those customers with a high level of involvement with banking services) on travel demand and therefore on fuel consumption.

Eight possible types of activities were identified as generating trips during a single visit to the CBD namely, banking, shopping, entertainment, work, school, personal business, church and paying of bills. From the questionnaires administered to the general public, the percentage of each trip mode could be determined. The percentage of each trip mode was, however, calculated separately (i.e. not in relationship with other trip purposes) because the respondents selected multiple trip purposes per single visit to the CBD. This is illustrated in figure 2 below.

Figure 2 Trip Modal split results



As shown in figure 2, shopping was the predominant trip mode with 90% of the respondents identifying it as part of their trip purpose(s) to the CBD. Banking came second after shopping with 80% of the respondents also identifying it as part of their trip purpose(s) to the CBD. This was then followed by paying of bills, work and then entertainment, with each mode having 76.7%, 70% and 43.3%, respectively. School, church and personal business each had 3% of the respondents identifying them as part of their trip purposes to the CBD.

However, in order to determine the level of involvement with banking services in comparison to other trip purposes, respondents were further asked to rank their main purpose(s) of trips to the CBD in order of their importance. Table 1 summarizes the rankings of the first and second important trip purposes to the CBD during a single visit.

Table 1 Rankings of first and second important trip purposes to the CBD

Trip purpose	First rank (%)	Second rank (%)
Work	60	3.3
Shopping	13.3	46.7
Banking	10	16.7
Bill payment	10	20.
Entertainment	0	3.3
School	3.3	0
Church	0	3.3
Business	3.3	6.7
	100	100

Source: Survey results

As illustrated in Table 1, under the first ranking, work scored highest as it was the first important trip purpose for 60% of the total sample size. Shopping scored next highest as it was first important to 13.3% of the respondents. It was then followed by banking and bill payment, with both having each 10% of the respondents placing them as their first important trip purposes to the CBD. School and business related trips scored least, each displaying 3.3%. None of the respondents identified church and entertainment as their first important trip purposes to the CBD. For second ranking, the score of work (3.3%) was reversed while banking (16.7%) and bill payment (20%) increased in popularity with shopping (46.7%) being the most favored under the same ranking.

The above findings indicate that the majority of people (i.e. 80% of the total sample size) visit the CBD to carry out banking services at some point in time. However, banking activities solely are not strong determinants of both travel demand and trip frequencies. Banking activities are normally done in conjunction with other trip purposes and therefore people will still find the need to visit the CBD. This is indicated by the low level of involvement with banking services, with only 10% of the respondents placing them as their first important trip purpose, while work had 60%. In addition, work constituted the largest share, catering for 82.6% of the total daily trips made to the CBD. Thus, work is usually associated with inelastic travel demand and high trip frequencies in comparison to other trip purposes (which only constituted 17.4 % of the total daily trips to the CBD).

However, although it has been shown that there is a low level of involvement with banking activities, e-banking can help reduce the travel demand (and therefore fuel consumption) for some of the trip purposes that are otherwise carried out not in conjunction with work related trips. For instance, transactions associated with banking itself such as payment of bills, shopping and entertainment can be conducted at remote locations from the CBD through the use of electronic delivery channels (namely ATMs, EFTPOS , Internet and mobile banking).

3.2.3 Socio-economic characteristics of e-banking facilities users

There is usually a strong relationship between family income, educational levels and occupational status. Thus occupation is used to surrogate for the other two variables in much of the following analysis. Figure 3 shows the distribution by occupation category, of the 30 electronic delivery channels users interviewed.

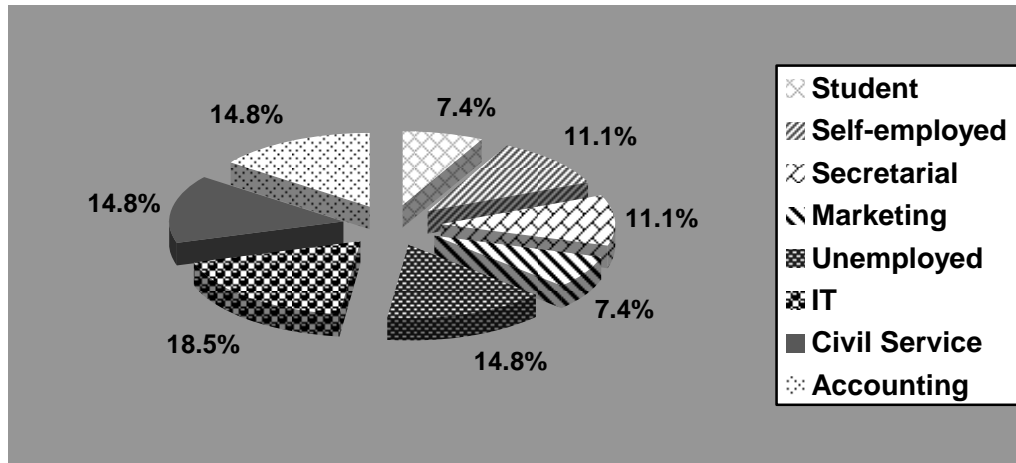


Figure 3 Occupational categories of e-banking services users

Source: Survey result

From figure 4.6, clearly the electronic channel users cut across all socio-economic groups, so that the often made association between e-banking use and the high income population is not accurate. In addition, research findings indicated that e-banking users also cut across all age groups, with respondents from the age of 16 to 55 being identified as making use of at least 1 of the 4 delivery channels. This is somewhat contrary to the common perception that the youths are more exposed to technology and are more willing to use it than the elderly. With regard to gender and channel use, it is women who highly use EFTPOS than men. Women with 63% constituted the largest share of the 19 EFTPOS users. This can be partly attributed to the fact that women are usually highly involved in shopping activities than men.

3.2.4 Benefits derived from the use of e-banking services

Table 2 illustrates the results of the benefits given by respondents from utilizing each electronic delivery channel.

Table 2 Benefits derived from utilizing a particular electronic channel

Benefits derived	ATMs	EFTPOS	Internet banking	Mobile banking
	N=26 %	N=9 %	N=2 %	N=3 %
less transaction costs	3.8	0	0	33.3
Accessibility	7.7	21	0	33.3
any time service	50	0	0	0
Timeliness	57.7	26.3	50	33.3
Privacy	27	0	0	0
transportation cost savings	0	21	50	33.3
non-human errors	3.8	0	50	0
Convenience	42.3	0	100	33.3
less need to carry a lot of cash around	0	82.2	0	0
None	3.8	0	0	0

Source: Survey results

Anytime service, timeliness of transactions, convenience and privacy were key benefits derived from using ATMs. EFTPOS were highly appreciated for freeing users from the burden of carrying a lot of cash around as well as for accessibility and timeliness of transactions. What is of particular importance to note, is that they were also valued for enhancing transportation costs savings among the users. While the number of internet and mobile banking users may be insignificant, users appreciated the two for their timely and convenient services as well as for enabling them to reduce transportation costs. Interestingly, none of the respondents cited transportation cost savings as a benefit derived from using ATMs. Respondents cited that ATMS are mainly located at bank branches thus there is need to travel in order to access them. This indicates that EFTPOS, Internet and mobile banking have more potential to promote fuel conservation in a city in line with what has been highlighted in Chapter 2.

3.2.5 Cases of transportation cost savings

There is usually a strong relationship between transportation costs and fuel costs, so the former is used to surrogate for the latter in the following analysis. In order to determine areas where e-banking has promoted the efficient utilization of fuel; respondents interviewed were asked of incidences where transportation cost savings were encountered through the use of e-banking services. Fifteen (15) out of 27 e-banking users (equating to 56 %) acknowledged such savings through the use of particular delivery channel(s). ATMs and EFTPOS were the predominant channel associated with significant transportation cost savings by users. The EFTPOS users cited that the channel enabled them to make electronic payments for purchases made even from outside the CBD (normally at shopping centers at their places of residence) without the need to visit their bank branch first to access their accounts. Findings revealed that the channel is mainly used for grocery purchases (and to some extent cash withdrawals) which are usually done at least once a week. Access to accounts at ATMs located at off-branch premises was also appreciated.

Internet and mobile banking were not widely used. The few users of the internet channel indicated that while they only have access to the Internet from Internet cafes in the CBD, the

channel permitted one-stop access to various sectors for transactions. In addition, although transportation costs could not be determined other non monetary benefits were cited such as savings on time (i.e. time which could have otherwise been spend visiting various sectors and on queues), as for mobile banking.

The basic criterion for measuring transportation cost savings through the use of e-banking services is the “without” test. i.e. the costs with the use of e-banking channel and without such use. The “with” and “without” test, however, indicated that without the use of the e-banking services, the transportation costs would be incurred and with the use of electronic delivery channels, the same amounts were saved. This indicates that e-banking has a role to play in the promotion of fuel conservation in a city, (particularly that used for travel and transportation), only if people make use of such facilities.

4. CONCLUSION

Although literature reveals that Internet and mobile banking are highly associated with energy efficiency, on the contrary, this study has observed that there is a limited use of these channels in payment systems in Zimbabwe. Instead, findings indicated that ATMs and EFTPOS are undoubtedly the most popular electronic delivery channels for banking services in the country. The paradox is that the users do not perceive transportation cost savings as their prime motivation to use the channels.

Although there are transportation cost benefits, the study showed that banking activities solely are not strong determinants of both travel demand and trip frequencies. Banking activities are normally done in conjunction with other trip purposes and therefore most people will still find the need to visit the CBD.

Though generalizations cannot be made from a single case study, the research contributes to existing knowledge on energy efficiency in general and in the urban system context in particular. The study revealed that, it is quite possible in theory for energy consumption to be reduced in ways which will have little or no effect on spatial structure. What really matters is how people (not urban structures) respond to energy constraints. However, in as much as the adoption of ICTs can influence travel patterns, findings highlighted that their effective use and development are mainly a function of availability of adequate legal and physical infrastructure as well as widespread ICT diffusion in the global market. More so the City of Harare can benefit immensely from ICT strategies that reduce transportation costs as energy supplies are very erratic and expensive.

5. REFERENCES

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