

**IMPACT OF ICT ON SERVICE MANAGEMENT IN THE ZIMBABWEAN
PUBLIC SECTOR: A CASE OF ZIMBABWE NATIONAL ROAD
ADMINISTRATION (ZINARA)**

Richard Duve¹ and Zachary Tambudzai²

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Abstract

The paper seeks to find out the effectiveness of ICT on the supply side and how infrastructure limitations have a bearing on service delivery in the Zimbabwean public sector. In this paper we focus on ZINARA a parastatal mandated by the government of Zimbabwe to administer among other things, the collection of tollgates fees for the purposes of building new and up grading the existing infrastructure. A qualitative research design in the form of a case study was used to guide this research. Observations and interviews were the research instruments used to collect data from the tollgates under study and from senior executives at ZINARA Head Office in Harare. The study shows that ZINARA's migration from a manual system to ICT led tolling system, has improved revenue collection but has not eliminated queues at some toll gates under study. We recommend that ZINARA should introduce prepaid tolling for left hand driven trucks and other techno-savvy road users and dedicate a green route for them to avoid delays especially at the tollgates with more than one lane. In addition a swiping system that allows use of debit and credit cards may also be introduced.

¹ Mr R Duve is a lecturer and PhD Candidate: Faculty of Commerce, Department of Marketing Management, Midlands State University, P Bag 9055 Gweru, Zimbabwe. Email Address: duver@msu.ac.zw; richduve@gmail.com

² Dr Z Tambudzai is a lecturer: Faculty of Commerce, Department of Economics, Midlands State University, P Bag 9055 Gweru, Zimbabwe. Email Address: tambudzai@msu.ac.zw; ztambudzai@yahoo.com

Key words

Impact, ICT, Service management, Public Sector, ZINARA.

1. Introduction

The development and application of technology has long been recognised in both private and public sectors. Use of ICT has notably increased in the public sector through active participation of citizens as they transact with government departments such as Zimbabwe National Roads Administration (ZINARA).

ZINARA is a corporate body established in 2002 in terms of Roads and Road Traffic Act (Chapter 13:18) to build tollgates, rehabilitate and modernize the existing road infrastructure in Zimbabwe. Its other mandate in consultations with the line minister of Transport and Infrastructure development is to fix road user charges and collect such charges including toll fees or any other revenue of the road fund. It is also responsible for auditing the use of the road fund by road and local authorities and ensure that the disbursed funds are utilized for the intended purpose. However, queues have been observed at tollgates along major high ways in Zimbabwe, despite the fact that ZINARA migrated from manual tolling to automated systems. This motivated the study to investigate the effectiveness of ICT and supporting infrastructure at the tollgates in improving service delivery to the motorists who pass through the ICT led systems daily.

2. Brief literature survey

As far as technology and queues is concerned, Zeithaml and Bitner (2003) suggest that in any service management, technology improves service delivery and thereby eliminating queues. But due to the nature and complexity of services, decision making authority must be decentralized as far down as possible to the shop floor. The above argument is corroborated by Omar (2013) who points out that with the introduction of e-government in Qatar, queues have been eliminated and improved service delivery to the public.

Focusing on technology and the integration of services, a recent research by Ruhode (2013: 47) reveals that “information sharing challenges is the greatest

challenge in developing countries than developed ones”. Technologies such as business process management (BPM) promote ongoing collaboration between IT and business users to jointly build applications that effectively integrate people, processes and information (Cooper and Patterson, 2007). On the other hand, Seddon (2005) stresses that ICT provides immense benefits in improved information availability, processes and promoting interactive relations between governments and other stakeholders (Ebrahim and Iran, 2005). Ruhode (2013) acknowledges that internet has revolutionized services offered by governments through online transactions. His views are supported by Watson and Mckeown (1999) who agree that ICT connects business to consumers (B2C), Government to Government (G2G) and government to business (G2B).

According to Peters (1988:25) “Workforce training and constant retraining and the larger idea of the workforce as appreciating skills must climb to the top of the agenda of an individual firm and the nation”. Only highly skilled people will add value. Supporting the notion by Peters (1988), Pfeffer (1997) argues that training and skill development is a must if competitive edge is to be achieved through people. The changing bases of competitive success are hinged on having a workforce with adequate ICT skills to deal with the dynamics of the ICT environment. However, Pfeffer (1997) is quick to point out that training tends to go to those already fairly well trained and most often management or professional ranks, whilst much less is done to upgrade the skills of the frontline employees, who interface regularly with the customers in the “house of Gemba” (Imai 2012, Maurer 2014). This has a bearing on the image of government in the case of government employees who should improve the service delivery to the citizens through use of ICT.

Road transport continues to grow at pace with congestion and bottlenecks affecting ever growing part of the network” and Zimbabwe is no exception. But road infrastructure cannot be expanded forever, there is need to have better overall traffic management in order for it to be used effectively. One way is charging the road use through Electronic Toll and Traffic Management (ETTM), whose major component is electronic toll collection (ETC). The ETTM system is an element of ITS that allows for nonstop toll collection and traffic monitoring through a computerized system to uniquely identify each vehicle electronically, collect the toll fee and provide general vehicle monitoring and data collection. ETTM technology and infrastructures provide the necessary capabilities for

future applications (solution after next) (Nadler and Hibbino 1998) such as incident management, alternative route guidance and travel demand management (TDM). If properly implemented ETTM greatly reduces congestion, increase operating efficiency and improve travel time.

One good example is an express pass system, a pilot program developed by the San Diego, Association of Governments (SANDAG) is a monthly subscription program that allows drivers to pay a monthly fee in order to use express lanes. In order to participate, the drivers must have an express pass account and display a permit in their wind shield when they use the lanes and research shows that customer satisfaction is high and perceived travel time savings is also high.

3. Research methods and findings

In order to investigate the effectiveness of ICT on service management at ZINARA tollgates, the study addressed the following questions:

- Why are queues observed at ICT led ZINARA tollgates?
- How effective is the technology being used?
- Are the employees adequately trained to execute their duties efficiently?
- Is the infrastructure coping with large volumes of traffic?

The research is based on a qualitative research design and data collection tools included observations and interviews. Informants included motorists passing through, Chivi, Mashava road, Shurugwi road, Nyabira and Shamva turnoff tollgates. To augment the observations' and to clarify issues observed at the tollgates under study, interviews were conducted with the ZINARA Acting Chief Executive Officer, who also doubled as Director technical and the ZINARA ICT manager. A total of 209 valid observations out of 270 were conducted at ZINARA tollgates understudy giving a response rate of 77%. To augment the observations, interviews were conducted with two senior ZINARA managers who had ICT and technical background at ZINARA Head Office.

Research findings

Observations at the Chivi, Mashava and Shurugwi toll gates showed that queues are the order of the day. There are only single traffic lanes on each side of all the tollgates, despite the fact that the Chivi and Shurugwi road tollgates service traffic to and from Chirundu enroute to Zambia and Democratic Republic of Congo, from South Africa through Beit Bridge border post. These two tollgates become extremely busy especially during festive seasons and their infrastructural design have limitations and cannot cope with increased traffic. Larger volumes of traffic are also witnessed at pick hours that are from 0700 hours in the morning and from 1600 hours in the afternoon.

To add to service management dilemma at these tollgates, the cubicles are not air conditioned despite the fact that Chivi is very hot and Gweru sometimes is very cold posing discomfort to service providers and impacting negatively on service delivery.

Left hand driven trucks also cause delays at the tollgates as the drivers have to disembark to go and pay the toll fees on the right hand side. Generally observations of these tollgates show that motorists also do not want to pay toll fees with loose money but prefer to use large denominations causing delays as the tollgate cashier may not have larger flout for security reasons, and this was also observed at all the tollgates understudy.

Observations at Mashava road tollgate shows that the facility is not busy but infrastructure has the same design as that of Chivi and Shurugwi toll gates. The cubicle is not air conditioned posing discomfort to users as it is situated in hottest parts of Chivi.

Observations at Nyabira road and Shamva road turn off tollgates show that whilst application of technology should result in service improvement queues are still observed especially at 0700 hours and from 1600 hours at these tollgates. The left hand driven trucks also cause delays at tollgates because they are not suitable for our British designed road system which uses right hand driven vehicles. The driver has to disembark and go around to the cashier to pay if the driver has no passengers.

Observations at Nyabira and Shamva road turn off tollgates also revealed that queues are not caused by technology delays but the travelling motorists themselves. Motorists would want to pay toll fees using larger denominations

such as USD 100 to pay USD2,00 posing serious change challenges and causing delays and congestion. These two tollgates have state of the art infrastructure and they meet international standards. The Nyabira road tollgate has two traffic lanes on each side whilst the Shamva road turn off tollgate has more than two lanes on each side and the current technology can be upgraded to e-tolling.

General observations at all the tollgates understudy also show that the ICT led tollgate system is not harmonized with other related systems such as central Vehicle registry (CVR) which is a government's central Vehicle management system. During the Interviews with the ICT manager at ZINARA head office he acknowledges that services are more optimized and improve service management and delivery when they are integrated. The ICT manager commenting on the service integration also said "we are now working on integration with other government departments like CVR and Vehicle inspection department (VID) so that our systems talk to each other seamlessly" a situation which was also corroborated by the acting CEO who said "we have started to integrate systems for example CVR to have a common database".

4. Conclusion

ZINARA's migration from a manual system to ICT led tolling system, has improved revenue collection for the government but has not eliminated queues at toll gates under study. For toll operators to be efficient, ambience has to be improved in the service arena. Poor service has a bearing on government image through government employees who should improve the service delivery to the citizens through the use of ICT.

Queues are not caused by technology limitations or challenges but human factors and left hand driven vehicles that are not suitable to our system. ZINARA has a modern ICT led tolling system but it needs to be upgraded in line with international trends to e-tolling as in South Africa, and other parts of the globe. The Chivi, Mashava and Shurugwi road tollgates do not meet international standards in terms of infrastructure. The senior executives of ZINARA Head Office acknowledge that employees manning the tollgates are regularly trained to meet the dynamic nature of the ICT.

Recommendations

ZINARA can introduce prepaid tolling for left hand driven trucks and other techno-savvy road users and dedicate a green route for them to avoid delays especially at the tollgates with more than one lane. Queues can also be eliminated when ZINARA upgrades its system to e-tolling and traffic management system, as it will eliminate use of large denominations to pay toll fees. Use of a swiping system will enhance speedy service delivery and reduce congestion. Because technology is ephemeral continuous training of employees is necessary. Integrating the ICT led tollgate system with other related departments such as CVR and VID will solve service management challenges as services can be obtained under one roof.

ZINARA should prioritise the upgrading of the Chivi, Mashava and Shurugwi road tollgates infrastructure to improve service delivery. Awareness campaigns on use of smaller denominations by motorists will go a long way in improving service delivery at ZINARA tollgates country wide. For employees manning the ZINARA tollgates, to be more effective, air conditioners need to be installed in their service cubicles as weather conditions may affect their service efficiency.

References

Cooper M. and Patterson P. (2007) Business Process Management (BPM) Definition and solutions accessed 26 May 2015 from http://www.cio.com/article/106609/Business_process_Management_BPM_Definition_and_solutions

Ebrahim Z, and Irani Z, (2005) E-government adoption: architecture and barriers. *Business Process Management Journal* 11(3): 589-611

Imai M (2012) *Gemba Kaizen: A common sense approach to a continuous improvement strategy* 2nd edition, Amazon.

Maurer R (2014) *One small step can change your life. The Kaizen way*, Paperback edition, Workman Publishing .N.Y

Nadler G and Hibbino S (1998) *Breakthrough Thinking: The seven principles of creative problem solving* 2nd edition.

Omar E. (2013) Qatar's e-government portal eliminates queues accessed 26 May 2015 on <http://shorfa.com/enGBarticles>.

Peters T J (1988) *thriving on Chaos: A handbook for management revolution*, 1st edition, McMillan.

Pfeffer J (1997) *Competitive advantage is through people; unleashing power of your workforce*; Harvard Business School Press, Boston.

Ruhode E (2013) "E-government Implementation for Intraorganisations Information sharing: A holistic information systems approach for developing countries" D Phil thesis: Cape Peninsular University of Technology

Seddon P.B. (2005) *Are ERP systems a source of competitive advantage? Strategic Change* John Wiley and sons Ltd.

Watson R.T. and Mckeown P.G. (1999) Manheim auctions: Transforming Interorganisational relationships with an extreme. *International Journal of Electronic Commerce* 3(4) 29-41

Zeithaml V.A. and Bitner M.G. (2003) *Services marketing; Intergrating customer focus across the firm*, 3rd edition, Fata, McGraw Hill Publishing Co. New Delhi.