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The impact of Information Systems usage on productivity: A retrospective analysis and an empirical study in Cape Town tourism of South Africa

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Abstract

In this article, the researchers examine the direct impact of Information Systems Usage to Productivity at Cape Town Tourism. Data for the full sample of individuals who use information systems was analysed. The results clearly demonstrate that information systems has a positive impact on productivity. This is compromised however when there is a lack of training and poor systems performance. The study determined that in order to obtain the best out of the system, end users need to be consulted before implementation of any new system. System performance was also found out to be problematic as faced by employees of Cape Town Tourism when using their information systems.

Key words: Information systems, tourism, Cape Town

INTRODUCTION

Information Systems have revolutionised the management of contemporary organisatio3ns and introduced a paradigm shift in the way businesses operate. The tourism industry is no exception; a variety of new computerised systems are designed to facilitate the inter-organisational and intra-organisational management and communications. As a result, several cities in South Africa have benefited by developing destination-management systems, which enable them to coordinate their operations and promote their products (Bocij, Greasley and Hickie, 2008).

Cape Town Tourism (CTT) is one of the largest voluntary tourism industry associations in the world, with close to 2 500 members. Cape Town Tourism's visitor strategy, implemented through a private-public partnership with the City of Cape Town, is recognised by the United Nations World Tourism Organisation for global best practice. Since 2008, Cape Town Tourism's focus has expanded to include destination marketing. In the run-up to the 2010 FIFA World Cup™ held in South Africa, the focus was on managing the perception of Cape Town and ensuring the successful hosting of the event to maximize economic benefits and the long-term promotion of the city.

Cape Town Tourism is committed to playing a leadership role in ensuring that the tourism industry in the Western Cape Province of South Africa embraces technology. CTT invested significantly in the area of technology, building upon the solid foundation laid in the run up to the Fifa World Cup hosted in South Africa in 2010, and keeping up with global trends. A radical overhaul of Cape Town Tourism's information systems and technology was conducted; hence, many key projects have been commissioned. In setting up the unified Cape Town Tourism in 2004, CTT had inherited older tourism models and organisational structures that have become irrelevant and inefficient. It has become apparent to CTT that there was a need to eliminate some of the duplication of effort that has been the

legacy of the past Cape Town Tourism structures.

In an effort to improve the operation processes, the following interventions were made for Cape Town Tourism:

- A radical overhaul of Cape Town Tourism's systems and technology. This includes a new centralised online booking system called Visitor Membership Management System (VMMS) that enables much enhanced data management and online real-time booking;
- A new Point-of-Sale System (POS) across Cape Town Tourism's network of Visitors' Information Centers which is part of a new retail and commercial strategy; and
- A sophisticated financial management software programme called Syspro. This system is designed to eliminate duplication of manual operations and to streamline operational processes in order to increase efficiency within the company.

In order to achieve the above strategic objectives, Cape Town Tourism realised that technology has made the business environment turbulent. This turbulence coupled with the ever-changing market and customers has forced businesses within the Western Cape tourism industry to rethink how they deliver their services, to remain viable and to maintain a competitive advantage over their rivals (Kuratko and Hornsby, 2001).

Before 2009, most of the operations at Cape Town Tourism were manually performed; inventory was controlled on Excel spread sheets; accounting was managed by some unknown accounting software; and membership data was managed on spread sheets. These manual operating procedures could not meet the current business needs of a fast-growing company. There was no proper system in place for managing visitors, members, inventories, debtors, creditors, cash flow and assets of Cape Town Tourism. For CTT to remain viable and competitive, the executive team, in consultation with the Board of CTT, devised a plan to implement systems that could handle accounting, retail, visitor and membership strategies of Cape Town Tourism. CTT implemented information systems' technology to enhance the scope of their products and services. Recently, Cape Town Tourism rolled out three information systems; namely, Visitor Membership Management System (VMMS); Point of Sale System (POS) and Syspro. These systems were designed to streamline operational processes, eliminate duplication and increase efficiency within the company.

Three systems were commissioned in Cape Town. A brief description of the systems is provided below.

Visitor Management Member system (VMMS)

VMMS is a system that is a source of the record of commission received, membership subscriptions, number of members visited by CTT membership administrators and existing members. The visitors (tourists) have access to VMMS to make bookings via the CTT website. The product (i.e. accommodation) is scrutinized by the visitor and the most appropriate product is then chosen by the visitor.

Syspro system

The Syspro system is accounting software used for the processing of financial information within CTT.

Point of sale system (POS)

The Point of Sale System (POS) is a system that records payment received from customers. All monies received at Cape Town Tourism are accounted for on POS; invoices are also generated by the POS system. Once a membership-subscription payment has been made,

POS will notify VMMS and the status on VMMS will be updated to "Paid". If membership-subscription payment is not received within three months after follow-up, however, the status on VMMS will change to "Inactive Member". This will only be reactivated once payment has been made by the member. An invoice which is matched to the Pro-Forma Invoice, using the reference number, will be generated. Once payment has been made on POS, automatic communication with Syspro is undertaken to record the debtor and thus the relevant amount received, as well as the revenue/commission received. A "Day End Report" is generated, which should tally with the banking for that day as well as with the bank deposit slip. The POS system is integrated with the Syspro System.

Management faces a huge challenge to determine if information systems increase productivity at Cape Town Tourism. CTT's executive management has a strong drive to implement information systems, and increase productivity. The effectiveness of these systems was not tested empirically in Cape Town. The aim of this study was to investigate the impact of information systems' usage on productivity at Cape Town Tourism.

The findings allow management to clearly evaluate whether end-user training on information systems was effectively implemented in line with the job requirements of the users and provide data that will ultimately result in helping Tourism improve its future implementation of training and development projects.

The following research objectives were developed:

- To determine the impact of information systems' usage on productivity at Cape Town Tourism;
- To determine problems experienced with utilisation of information systems by employees of Cape Town Tourism;
- To make recommendations on ways for improving the effectiveness and efficient utilisation of information systems

LITERATURE REVIEW

Information technology (IT) is crucial to the success of any business. IT has brought with it a number of changes and challenges that affect businesses. Information systems are the means by which organisations and people use computers to collect, process, store, use (analyse) and distribute information (Agarwal and Lucas 2005; Laudon and Laudon, 2012). Information systems contain information about significant people, places and things within the organisation or environment surrounding it. Computer-based information systems are complementary networks of hardware/software that people and organisations use to collect, filter, and process, create, and distribute data. In order to circulate information and ideas, numerous information systems exist today that are continuously updated to promote ethnographic approaches; to ensure data integrity; and to improve the social effectiveness and efficiency of the whole process. Information systems at Cape Town Tourism are focused on processing information within organisations, especially within business units; sharing the benefits with all the stakeholders

Global impact of Technology on Productivity

It is a common belief that when technology penetrates any economy, national productivity improves. According to Jon (2010), there are currently an estimated 1.8 billion business Internet users globally, expecting to grow to 2.2 billion users by 2013. There has been substantial growth in all world regions, with countries such as Africa and the Middle east both recording growth of over 1,600% during the last 9 years. The countries of the Middle East and Africa currently represent only 8% of the global online population; however, the next five

years will see some of the highest growth rates, around 13%.

With more than a billion people now having access to information technology across the globe, online activity has become habitual. According to Mariette (2011), CEO of Cape Town Tourism, "*Over 70% of both domestic and international travelers cite the Internet as their primary source of information about destinations, hotels and attractions prior to and during their travels. 48% of tourists are making their travel bookings online, often with far less planning or lead time than was the norm*".

After having briefly assessed the global impact of technology on productivity, it is necessary to discuss the application of information systems to the tourism industry in South Africa.

Applying Information Systems to Tourism Industry in South Africa

Of recent years, the penetration, sophistication, and diversity of information systems in the tourism Industry in South Africa have increased dramatically. Information systems, nowadays, actively support all core business processes of the tourism industry, bringing about increased operational and organisational efficiency. More and more tourism information centers throughout South Africa are developing strategic awareness of the importance of information systems. ERP systems integrate internal and external management information across an entire organisation, embracing finance/accounting, sales and service and customer relationship management (Devaraj and Kohli, 2003). The purpose of ERP systems is to facilitate the flow of information between all business functions within the boundaries of the organisation; and to manage the connections to outside stakeholders.

Maximizing IS to gain a Competitive Advantage in the Western Cape

Information Systems is not simply a collection of hardware and software; it is far more than that, it is a tool. This information systems' tool is used in a number of ways, and the value of it depends on how it is utilised. Strategic planning in utilising information systems is the key to gaining a competitive advantage. Management at Cape Town Tourism does not consider Information System as a mere commodity; the company views these as assets and as a means of gaining a competitive lead in the tourism industry. Leigh (2008) stated that with proper planning, a company can maximize profit while decreasing overhead costs. Implementing an information system will initially be costly, but if business requirements and processes are properly and accurately identified, the payoffs are vast. Businesses who do not have a web presence or are engaging in e-commerce may find themselves being ousted by their competitors (Leigh, 2008). When exploring the value of IS from both the technical and the competitive-advantage perspective, information systems are a definitive and effective means of expanding the organisation.

The Contribution of IS towards Productivity in the Tourism Industry

There has been much debate on whether or not the investment in information systems (IS) provides improvements in productivity and business efficiency. Recently, firm-level studies, primarily in the tourism sector, have shown that there are significant positive contributions to productivity from investment in information systems. For several years, scholars and policy makers lacked conclusive evidence that the high levels of spending on information systems by tourism businesses improved their productivity. Earlier studies, such as Loveman (1994) and Barua, Kriebel and Mukhopadhyay (1991), stated that there is no conclusive evidence to refute the proposition that IS investment is inconsequential to productivity.

Recently, researchers working with firm-level data have found significant

contributions from IS toward productivity (Lichtenberg, 1995; Brynjolfsson and Hitt, 1996). Some studies have drawn on the statistical connection between IT spending and performance measures such as profitability or stock value for their analyses (Dos Santos, *et al*., 1993; Strassman, 1990) concluding that there was insignificant relationship between IT spending and profitability measures, implying thereby that IT spending is unproductive.

In an organisation there are a variety of needs for information at all levels of management within the organisation. Senior managers need information to help with their business planning. Middle management needs more detailed information to help them monitor and control business activities. Employees with operational roles need information to help them carry out their duties. Various information needs lead to different types of information system such as: Transaction-Processing Systems; Management-Information Systems and Decision-Support Systems.

The fundamental advantage of using information systems is that integrating the numerous processes of CTT operations saves time and costs. Decisions may be made more quickly and with fewer errors. Data becomes visible across the organization. Tasks that benefit from this integration include sales forecasting, order tracking, revenue tracking and matching purchase orders, inventory receipts and costing (Laudon and Laudon, 2010).

Information systems centralise Cape Town Tourism data, bringing the following benefits to the company:

- They eliminate the need to synchronize changes between multiple systems—consolidation of finance; marketing and sales; human resources; and membership applications;
- They bring legitimacy and transparency in each bit of statistical data;
- They enable standard product naming/coding;
- They provide a comprehensive enterprise view (no "islands of information").They make real–time information available to management anywhere, any time in order for the appropriate decisions to be made; and
- They protect sensitive data by consolidating multiple-security systems into a single structure.

Despite the advantages, listed above, of using information systems, it is important to also list the disadvantages incurred by the installation of information systems at Cape Town Tourism.

- Re–engineering business processes to fit the various information systems damaged CTT's competitiveness and diverted focus from other critical activities;
- Information Systems cost CTT much more than if the company had gone for less integrated and/or less comprehensive solutions;
- High switching costs associated with information systems increased the IS vendor's negotiating power; which has resulted in greater support, maintenance, and upgrade expenses;
- Overcoming resistance to sharing sensitive information between departments has diverted management attention from core issues; and
- Extensive training requirements drain the resources of daily operations.

The limitations of information systems have been recognised, sparking new trends in their application development; the four significant developments being made in IS are creating a more flexible IS, Web-Enabled Information Systems, Enterprise Information Systems and e-Business Suites, each of which will potentially address the shortcomings of the current information systems. For information systems to be of maximum

benefit to Cape Town Tourism, the systems must be online all the time. System down time should not be allowed. System down time poses a great risk to CTT.

Therefore, in summary, it should be noted that there is clear evidence that information technologies have been recognised as business-continuity and enterprise-wide agility drivers. From a systems-performance perspective, especially in the e-business world, they can be used to reduce down time (increase up time) and consequently contribute to achieving better financial results and improve the overall operations. It is also clear that if businesses do not adapt to modern technology they may be less productive and have a competitive disadvantage. At Cape Town Tourism senior managers need information to help with their business planning. Middle management needs more detailed information to help them monitor and control business activities.

Employees with operational roles need information to help them carry out their duties. Cape Town Tourism has systems supporting each major business function such as accounting, sales, inventory, visitors and members. These systems support decision making needs for each of the segment within the organisation structure. Information systems improve efficiency of operations, which come at a high cost. In the long term the benefits may outweigh the costs. Therefore it is important to investigate if the investment in the three systems was affecting productivity from an end user and to provide recommendations for improvement.

RESEARCH METHODOLOGY

This research used quantitative research method in the form of an on-line questionnaire. The questionnaire was piloted with 10 members of the target population before administering the final one. Reliability and validity of the questionnaire was ensured by running pilot questionnaires, through consultation with a senior manager at Cape Town Tourism and an expert in the field of management. The research targeted all the employees of Cape Town Tourism, who used information systems, being a total of 72 employees. The response rate was 81%. Grinnell, *et al*. (2005) stated that response rates above 50% are within the acceptable range for external validity.
The questionnaire was administered online to the respondents and statistical data compilation was compiled in real time. The researchers gathered descriptive statistics through the questionnaire and measured responses through the Likert scale, about employees' feelings about information systems at Cape Town Tourism. The data were captured on a spread sheet, coded, and presented in tables as well as graphs, to allow clearer and better comparison of responses.

FINDINGS AND DISCUSSION

An ascending Likert scale ranking of data had been adopted. Strongly Agree and Agree have been combined and interpreted as Agree with a weighting of 1. All data reported as neutral has a weighting of 2. Data representing Strongly Disagree and Disagree has been reported as Disagree with a weighting of 3. To avoid bias, descriptive statistics was based on the original five-point ascending scale. Analysis of results and discussions has been conducted by comparing results that emerged from the questionnaire.

Information System users at Cape Town Tourism

Respondents were required to indicate the type of systems they were using. Table 1 shows that 45% of Cape Town Tourism staff use the VMMS, 28% use the Point of Sale System and 27% use the Syspro system.

See Table 1

Impact of Information Systems' Usage on Productivity

Respondents were asked whether information systems' usage has had an impact on productivity at departmental level at Cape Town Tourism. This question was posed to respondents to all three systems. A total of 60% of all three systems' users agreed that information systems' usage improved productivity; 21% disagreed and 19% were undecided. Ultimately, the view that training on information systems' usage does not contribute to productivity is a misconception, as pointed out by Noe, *et al*. (2010) that trained employees have the ability to meet changes in job requirement and the ability to prepare for the future. It is evident from the results of the survey that the majority of employees view the use of information systems as adding value to productivity at CTT.

Impact of Information System down time on productivity

In today's e-business, system down time is an unacceptable option because every minute of down time may yield undesirable financial effects. In order to remain competitive, information systems must be continuous in terms of data availability, and they must be agile in data accessibility. The respondents were required to indicate if they had experienced any system down time over the past four weeks. This question was designed to test system continuance at Cape Town Tourism's fourteen Visitors' Information Centers around Cape Town. Table 2 shows the percentage of staff members that either agreed or did not agree that there had been a system down time in their department over the past four weeks prior to the completing of the questionnaire.

See Table 2

It was found that 51% of VMMS users had experienced system down time over the past four weeks, 27% and 21% for POS and Syspro users respectively, experienced system down time. A stable information system should be in operation all year round. The results above show a great deal of instability within the systems of Cape Town Tourism.

Problems encountered when using Information Systems

One of the questions was aimed at investigating the problems that the users of VMMS, POS and Syspro were experiencing. It was found that 56% of the frustrations were system problems and 46% were training problems. According to Brinkerhoff (2006), 80% of training impact is determined by performance of system factors. The respondents were requested to state the problems encountered when they used information systems. Below are some of the responses from VMMS, POS and Syspro information system users.

- *"The system tends to freeze and it is very slow sometimes. There are too many steps involved when loading bookings and transactions. When searching for service providers such as accommodation and tours the specific service providers doesn't always pop up, you have to use different words or even cut down on the name of the service provider in order to get the specific service provider selected and booked".*

- *"Speed is an issue, to capture a sale while the customer is standing in front of you is problematic, since it is a long process, a customer is kept waiting longer than is necessary".*

Systems' Usage Knowledge

See Table 3

Respondents were required to indicate if training added to their knowledge on the system usage. Based on Table 3, it was found that 49% of the respondents either agree or strongly agree, 35% remained neutral and 16% either strongly disagreed or disagreed that training workshops had made them gain valuable knowledge of system usage. Thus about half of the respondents indicated that knowledge on the systems usage was due to attending the workshops.

Measures to Improve Systems' Efficiency

Respondents were also requested to suggest ways in which Cape Town Tourism could improve its information systems. 43% of participants suggested that there was a need for improving systems' knowledge. This will be a stepping stone to the application of the training on information system. 29% of the participants suggested that the training should be specific to their jobs so that they are in a position to know what and how they should then go on to apply the training. An average of 57% of system users felt that more training should be offered and a follow-up should be done within a month of the training. Staff feels that they should be given practical examples during the training on how to apply this to their business environments. Staff also felt that they should be consulted when designing a system.

RECOMMENDATIONS

From the findings and conclusions drawn, the following recommendations have been offered:

- During the research process, it was noted that all three systems are extremely slow; at times, they freeze. Cape Town Tourism Information Technology departments should urgently examine the system speed issue. The improvement of system speed will reduce frustration amongst the system users and increase customer satisfaction. The time a customer waits in the queue for a simple transaction to be completed will be reduced; and
- The training that is provided to the staff should give case-study examples that relate to their work environment. This will help participants to know where and how they can apply the training.

LIMITATIONS OF THE STUDY

The research was a regional one and could not be representative of South Africa, as a whole. It applied to the City of Cape Town. No personal contact was made with respondents to elicit pertinent. The researchers were therefore unable to read the non-verbal responses of the participant. Visible reactions may have contributed to the research information yet this could not be measured by the questionnaire.

CONCLUSION

In this paper, the researchers examined the direct impact of Information Systems Usage to Productivity at Cape Town Tourism. Data for the full sample of individual who use information systems was analysed. The results clearly showed that information systems has a positive impact on productivity, however there are some frustrations faced by systems users which are directly linked to lack of training and poor systems performance because of system spread.

The study also found out that in order to get the best out of the system, end users need to be consulted before implementing a new system. System performance was also found out to be one of the problems faced by employees of Cape Town Tourism when using their information systems.

The impact of information systems speed has a direct impact on information systems on productivity in the sense that slow performance systems decreases employee morale and thereby reduce productivity in the process. This study adds value to both employees, managers (including Supervisors, middle managers and executives) of Cape Town Tourism. If implemented, the recommendations of this study will surely assist both parties to rethink their approaches to future systems implementation and training and development process.

References

Agarwal, R & Lucas, H. (2005). *The information systems identity crisis*. New Jersey.

Babbie, E.1998. *The practice of social research*. 8TH edition London: Wadsworth Publishing Company.

Barua, A, Kriebel, C & Mukhopadhyay.T. (1991). *Information Technology and Business Value: An Analytical and Empirical Investigation*. University of Texas at Austin Working Paper, Austin, TX, May.

Bocij, P, Greasley, A & Hickie, S. (2008). *Business Information Systems*. 4th Ed London: Prentice Hall.

Brinkerhoff, R. (2006). *Measuring Phase: Evaluating effectiveness of performance improvement projects. Moving from training to performance*. *A practical Guidebook.*San Francisco: Berret Koehler publishers.

Brynjolfsson, E & Hit, L. (1996). Paradox Lost? Firm-Level Evidence on the Returns to Information Systems Spending. *Management Science*, 42(4),541-558.

Devaraj, S & Kohli, R. (2003). Performance impacts of information technology: is actual usage the missing link*? Management Science*, 49)2), 273-289.

Dos Santos, B.L, Peffers, K.G & Mauer, D.C. (1993).*The Impact of Information Technology Investment Announcements on the market Value of the Firm*, Information Systems Research.

Ekekwe. (2010). *Global Productivity = Technology + IPR*. Daily News.

Grinnel, R.M. and Unrau, Y.A. (2005). *Social work research and evaluation quantitative and qualitative approaches*. Oxford: Oxford University Press.

James, O.N. (1987). *Management Information Systems: A User Perspective.* 2nd Ed. West Publishing Co USA.

Jon, S. (2010). Forrester Research 'Global online population to hit 2.2 billion by 2013' URL: www.forrester.com/er/press/release/0,1769,00.html [Online].

Kuratko, D and Hornsby, J. (2001). *The power of entrepreneurial actions: Insight from Arcodia,* Inc. Academy of Management Executive. Pearson Prentice Hall.

Laudon, K.C & Laudon, J.P. 2012. *Management Information Systems, Managing a digital firm*. 12th Ed Pearson Prentice Hall, London.

Leigh, G. 2008. Maximizing information systems to gain a competitive advantage.

Lichtenberg, F. 1995. "The Output Contributions of Computer Equipment and Personnel: A Firm Level Analysis," Economics of Innovation and New Technology.

Loveman, G.W. (1994). *An Assessment of the Productivity Impact of Information Technologies*, in T.J. Allen and M.S. Scott Morton (Eds.), Information Technology and the Corporation of the 1990s: Research Studies, MIT Press, Cambridge, MA.

Mariette, D. T.H. (2011). Cape Town Tourism Annual Report.

Mitchell, J.C. 2000. *Case and Situation Analysis*. London: SAGE Publications Ltd.

Noe, R. A, John, R.H, Barry, A.G & Patrick, M.W. (2010). Human Resource Management 7th Ed Mc Graw-Hill Irwin.

Newman, I & Benz, C.R. (1998). *Qualitative-Quantitative Research Methodology: Exploring the Interactive Continuum. Illinois*: Southern Illinois University Press.

Strassman, P.A. (1990). *The Business Value of Computers*, Information Economics Press, New Canaan, CT.

TABLES

Table 1: Information Systems' users at Cape Town Tourism

System	Percentage Users
VMMS	45%
POS	28%
SYSPRO	27%

Table 2: Evaluation of System Failure at Cape Town Tourism

System	Agreed to System Down Time	Not Agreed to System Down Time
VMMS	51%	49%
POS	27%	73%
SYSPRO	21%	79%

Table 3: Analysis of knowledge gained of system usage

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Total
Raw %	5%	11%	35%	42%	7%	100%