CONTEXTUALISING THE USE OF ICTs IN THE PUBLIC SECTOR: THE CASE OF SELECTED GOVERNMENT DEPARTMENTS IN KWAZULU-NATAL

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Abstract
The study reports on the types, usage and availability of information and communication technologies (ICTs) in four selected government departments in KwaZulu-Natal. In order to achieve the stated aim, the study answered the following research questions: What is the purpose of using ICTs in government departments? How frequently do the civil servants surveyed use ICTs for work purposes? Which ICTs do the civil servants consider effective in improving work productivity in government departments? What are the civil servants’ recommendations for improving ICT usage in government departments? The study was informed by the diffusion of innovations theory. Mixed methods were adopted, employing aspects of both quantitative and qualitative approaches. Multistage probability samples were used to select the elements for the survey method. A questionnaire was used to collect quantitative data. The data were analysed using thematic categorisation and tabulation, and the findings were presented descriptively. The findings show that a variety of ICTs have been adopted in the sector. All civil servants surveyed indicated that they used ICTs to communicate with their colleagues and to disseminate departmental information. The most popular recommendations included the need for sufficient and coherent government policies regulating the training of staff in the utilisation of ICTs in the sector. Detailed recommendations for further study are provided.

Keywords
Civil servants, ICTs, impact, public sector use, social informatics
1 INTRODUCTION

Information and communication technologies (ICTs) are perceived to be key catalysts in current and future social and organisational changes. ICT is a compound term that is used to refer to the convergence of a wide array of new technologies currently being developed and used in the creation, processing and transmission of information. Broadly speaking, these technologies encompass all aspects of data/information recording, handling and transmission, and include computers, telecommunications, satellites, fibre optics, video-based multimedia applications, automated speech outputs and electronic broadcast technologies, to name a few. The term ‘information and communication technologies’, according to Ngenge (2003:1–2), usually also refers to a wide variety of applications, such as electronic mail (e-mail), word processors, video-editing programmes and web browsers. ICTs are credited with their transformative capacity in national economies, organisations and the global economy (Singh & Raja, 2010:3). For nations, ICTs are assumed to offer significant potential benefits for socioeconomic development and thus represent a promising way to lead developing nations to a path of more rapid development (UNDP 2001: section 2.1.1). According to Kling, Rosenbaum and Sawyer (2005:23) and Unwin (2009:7), ICTs have been portrayed “as a kind of panacea for a multitude of the world’s problems” and as “an important catalyst that will strengthen developing countries’ position in the information society”.

For organisations, ICTs provide the competitive advantage necessary to face the challenges of the new emerging global economy (Kling et al 2005:23). At global level, ICTs are intimately involved in creating one global space due to their ability to overcome temporal and spatial limits by setting up new modes of work and facilitating speedy communication and organisation across time and space (Law, Pelgrum & Plomp 2008:1; Plomp 2009:275; Walsham 2001:21). It is generally acknowledged that the information and knowledge age is here, and has in fact been with humankind since the last decades of the second millennium (Comninos, Esselaar, Gillwald, Moyo & Naidoo 2010:2; Thioune 2003:6). The notion that ICTs are pre-eminent for faster development, especially in underdeveloped countries, is pervasive and momentum is gathering on a global scale to support the development, diffusion, use and appropriation of ICTs in knowledge-poor countries and regions in Africa and Asia in particular (Comninos et al 2010:2; Thioune 2003:6). The founder of social informatics, Kling (2000), supported by Le Roux (2009), Millbery and Stuart (2010:2) and Singh and Raja (2010:5), observes that ICTs have brought about a dramatic reduction in the cost and time involved in storing, processing and transmitting information, leading to a fundamental reshaping of the public sector and society as a whole, and are generating changes in markets, private and public sectors, and economies in the more and less developed world.
2 STATEMENT OF THE PROBLEM

This study on social informatics is important, particularly in Africa where the utilisation of ICTs is either low or underdeveloped (Berleur, Nurminen & Impagliazzo 2006:08; Kling 2000; Mbatha 2009; Mutula 2008; Mutula & Mostert 2008; Ngulube 2007; Ntetha 2010). In terms of human needs, the use of ICTs has been categorised by numerous researchers as both fundamental and healthy, especially in public offices where the impact and consequences of ICTs take into account the interaction between institutions and society, particularly in government departments (Berleur et al 2006:8; Mbatha 2009; Mutula & Mostert 2008; Ntetha 2010). The social aspects of computers, telecommunications and related technologies are crucial in shaping organisational and social relations and in enhancing the ways in which social settings influence the use and design of ICTs.

In Africa, and particularly in KwaZulu-Natal (KZN) in South Africa, office transactions remain dated, with little or no acknowledgement of the social and technological benefits of computerisation in workplaces and organisations (Mbatha 2009; Ntetha 2010). This is despite the notions and labels accredited to the role of social informatics in integrating and building on bodies of research, such as ‘computers and society’, ‘social impacts of computing’, ‘social issues of computing’, ‘social analysis of computing’ and ‘behavioural information systems’. Very little has been done to integrate this knowledge through research. It was believed that a study on social informatics in the KZN government, focusing on civil servants, would enable civil servants to extend their abilities in accessing data and communication.

It is common for many technology-centred accounts of new ICTs to emphasise the ways in which they enable new kinds of actions that were previously more costly, difficult or impossible. For example, ICTs would enable civil servants to drastically reduce some of the communicational restrictions of space and time. In short, the use of ICTs by civil servants in government departments would completely restructure the public sector. A recent study conducted by Ntetha (2010) on social informatics in selected government departments in KZN established that, in some government departments such as Social Development and Education, the use of ICTs by some civil servants is generally low in terms of both frequency and variety. A study by Williams, Wilson, Richardson, Tuson, and Coles conducted as far back as 1998, supported by the study done by Ntetha (2010), also established that the use of ICTs by some civil servants is generally restricted to word processing and the use of specific applications. While Williams et al (1998) noted that civil servants made more use of a range of generic computer applications such as spreadsheets and presentation software, word processing still dominated their use of ICTs. Williams et al (1998) further observed that other types of ICTs, such as the Internet and Web, databases and video conferencing, were used relatively less. Ntetha’s study established that some ICT tools, such as video conferencing, are still not available in the targeted departments. Furthermore, in Ntetha’s study, civil servants identified a range of issues that they regarded as inhibitors to their effective use of ICTs, particularly a lack of access or the availability of hardware and software, and a lack of ICT education, skills and knowledge.
3 AIM OF THE STUDY

The article reports on the adoption and utilisation of ICTs by civil servants in selected government departments in KwaZulu-Natal.

4 RESEARCH QUESTIONS

In order to achieve the stated aim, the following research questions had to be answered:

a. What is the purpose of using ICTs in government departments?
b. How frequently do the civil servants use ICTs for work purposes?
c. Which ICTs do civil servants consider vital for improving work productivity in government departments?
d. What are the civil servants’ recommendations for improving ICT usage in government departments?

5 LITERATURE REVIEW

ICTs are transforming the landscape in the public sector, and progress is being made daily in making information available to the citizenry. Kaisara and Pather (2009:4) observe that ICTs are shrinking the traditional barriers of time and space while increasing the rate of growth of the amount of knowledge; information can be transmitted faster, in greater bulk and more easily than ever before, making human endeavours, in all spheres of life, appear limitless. Information is, in many ways, the lifeblood of most organisations. This is nothing new, but the use of ICTs has revolutionised how information is gathered, communicated and analysed. Since the 1950s computers have been used by organisations to support their information processing needs, so that today all but the very smallest of businesses are heavily reliant on them (Bolc, Makowski & Wierzbicki 2010:203; Yull, Jarvis & Lawson 2005:39). The development of the capacity to use computers for communication has been perhaps the most revolutionary event in the world in the last twenty years. The use of communication tools can produce direct benefits for its users: they can make it cheaper, easier and quicker to communicate with people (Agard 2010; Powell 2003:207).

Over the past decade, the Web has had far-reaching implications for the way in which information is shared and services are rendered by both public and private organisations (Kaisara & Pather 2009:4). Kaisara and Pather further note that an important issue on the research agenda has been the adoption of the Web in the public sector in the form of electronic government or e-government. Authors such as Evans and Yen (2006) and Mutula (2008) show that the benefits brought about by e-government include increased convenience for citizens in areas such as filing tax returns, increased transparency of government activities and greater access to government information. In South Africa’s young democracy, there continue to be high expectations of the government with regard to improved service delivery and better consultation with citizens. Such expectations
are not unique to this country, prompting Mutula (2008:235) to call on all governments to recognise that the implementation of e-government systems affords them the opportunity to enhance service delivery and good governance.

The implementation of e-government has been widely acclaimed in that it provides new impetus to deliver services quickly and efficiently (Evans & Yen 2006:208). Kitaw (2006:7) and the World Bank (2008) define e-government as the use of ICTs such as wide area networks, the Internet and mobile computing by government agencies in order to transform relations with citizens, businesses and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with businesses and industry, citizen empowerment through access to information and more efficient government management. The resulting benefits include less corruption, increased transparency, greater convenience, revenue growth and cost reductions (World Bank 2008). Likewise, UNESCO (2008) describes e-governance as the public sector’s use of ICTs to improve information and service delivery, encourage citizen participation in decision-making processes, and make the government more accountable, transparent and effective.

The government, as the biggest service provider to the country’s citizens, should ensure that all people, irrespective of race, religion and education, receive equal treatment, services and access to information. The ICT tools used by the government should therefore be able to reach all people, even in remote areas. ICT tools are able to give citizens a platform to voice their complaints and concerns, even when they are not able to contact government offices directly. Citizens should, for example, be given access to the telephone numbers of the various departments, as well as e-mail addresses and cellphone numbers, so that they can communicate with civil servants at any time (Royal Government of Bhutan 2006). According to Van Jaarsveldt (2008), when a government decides to introduce e-government into its service delivery systems, it should ensure that the mindset of the public servants is changed, and that they agree with its inception since people normally fear change, especially with new technologies. Secondly, the government should inform and engage with the public to convince them of the importance and advantages of e-governance and the use of ICTs. For e-government to make an impact on service delivery, there needs to be interaction and partnerships between all stakeholders – customers, the government, private organisations, businesses, and so on.

5.1 Diffusion of Innovations Theory

Rogers’ framework (1995), the diffusion of innovations theory, was found useful as the study sought to understand the diffusion and use of modern ICTs in the government departments under investigation. Clarke (1999) observes that Rogers’ theory has been used as the theoretical basis for a number of information systems projects. Rogers (1995:21) also notes that the theory has been widely used to investigate the diffusion of organisational and societal innovations. Thus, the theory’s application to information technology and organisational and societal relations made it the most appropriate theoretical framework.
for this study. Some inventions, like the cellphone, take the world by storm, while others (e.g. video conferencing) seem to fail. Some (like the fax machine) lie dormant for decades, but when their time comes their use spreads rapidly, even explosively. Conversely, most innovations (depending on their purpose, need and acceptance) often achieve slow penetration at first, but then grow quickly as their adoption and rate of use increase. Others may grow fast in the beginning but slow down as their use is exceeded by newer, simpler and cheaper technology. A good example here is the use of broadband Internet access. Its adoption and utilisation are directly related to its availability, speed and affordability, both to government departments and the general public.

According to the diffusion of innovations theory, innovations are more readily adopted when they provide a relative advantage compared to older ideas, and even more so if they are compatible with the existing value system of the adopter. Rogers (1995:23) postulates that there are certain characteristics that determine the rate at which an innovation is adopted by a social system, and that these characteristics include relative advantage, compatibility, complexity, trialability and the observability of the innovation. Numerous researchers such as Kling (2000) and West (2005) have pointed out that the escalation of ICTs has had a considerable impact on the way governments function. In his study, West (2005) further observes that the use of ICTs in government (or e-government) is on the rise, with 19 per cent of all government organisations worldwide offering online services, and South Africa is no exception. Rogers’ model of the innovation-decision adoption process emphasises the role of individual behaviour in the technology adoption process (see Figure 1). The model maps the actions taken and the choices made, as an individual evaluates an innovation and decides whether or not to incorporate it into an ongoing practice.

**Figure 1: Innovation decision process (model)**

Adapted from Rogers (1995:163)
6 METHODOLOGY

A survey targeting key government departments was used to collect data. Because of the diverse and dispersed nature of the public sector in South Africa, the scope of the study was narrowed to government departments in KZN. In order to obtain a representative sample, the systematic sampling method was applied. In this technique, five out of 11 suitable district municipalities were selected, where every second district was chosen from a list. The sample size for the whole study was 260 managers. In total 152 questionnaires were completed and returned. The five district municipalities selected were uMgungundlovu, uMzinyathi, Zululand, uThungulu and Sisonke. In these districts, four government departments were targeted, namely the Departments of Arts and Culture, Home Affairs, Education, and Health. These departments were sampled using purposive and systematic sampling techniques. Three selection strategies were used: (i) Identifying highly dispersed and service-intensive departments; (ii) Categorising the personnel in the selected departments into top-, medium- and lower-level management; and (iii) Dividing the service areas into rural or urban-based centres. The data collected were analysed using thematic categorisation and tabulation, and the findings were presented descriptively.

7 RESULTS

The sections below provide the demographics of the respondents, the purpose of using ICTs in government departments, frequency of civil servants using ICTs for work purposes, ICTs that civil servants consider vital for improving work productivity in government departments, and civil servants’ recommendations for improving ICT usage in government departments.

7.1 Demographic profile of the respondents

In terms of job titles, the respondents ranged from assistant managers to district managers, with the majority (33; 22%) holding the position of assistant manager. Most of the respondents (66; 43%) had bachelor’s degrees. A study by Ayoo (2001) established that most professionals above the age of 40 years in developing countries are often conservative and slow in keeping pace with ICT advancements. This study established that a large number of respondents were between the ages of 40 and 49 (47%), followed by respondents in the 30–39-year age group (28%). Respondents in the age group of over 50 years and those between 20 and 29 ranked third and fourth, respectively. It was also vital to assess gender proportionality in the study, as it is a widely held view that males dominate use of and access to ICTs. Earlier studies have identified women and girls as disadvantaged in their uptake of ICTs (Ngenge 2000). Minishi-Majanja and Kiplang’at (2003:70) have also suggested that gender disparity among professionals in Africa can be attributed partly to the educational system and partly to factors inherent in society at large. Shaw and Gant (2002:517) argue that it has been empirically proven that women and men differ in their attitudes towards, comfort with, and anxiety about,
computer technology. The results of the study reported on here indicate that there was clear male dominance (89; 59%) in the sample population. In terms of the level of management, most of the respondents (68; 45%) were top managers.

### 7.2 Reasons for using ICTs

It was important for this study to capture the varying opinions and attitudes of the respondents related to ICT usage in their respective departments. The respondents were provided with possible options to choose from and asked to rate each one on a scale of 1 to 4, depending on how applicable it was to their situations (1 = strongly disagree, 4 = strongly agree). Appropriate multiple answers to closed questions were selected. The table below shows the number of responses for each rating and the corresponding percentages.

#### Table 1: Reasons for using ICT tools and services (N=152)

<table>
<thead>
<tr>
<th>Use of ICT tools and services</th>
<th>Strongly agree</th>
<th>Agree</th>
<th>Disagree</th>
<th>Strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>To communicate with colleagues</td>
<td>152 (100%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>To disseminate information</td>
<td>152 (100%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>For research purposes</td>
<td>89 (59%)</td>
<td>32 (21%)</td>
<td>31 (20%)</td>
<td>-</td>
</tr>
<tr>
<td>For information retrieval</td>
<td>34 (22%)</td>
<td>44 (29%)</td>
<td>33 (22%)</td>
<td>41 (27%)</td>
</tr>
<tr>
<td>For marketing purposes</td>
<td>34 (22%)</td>
<td>41 (27%)</td>
<td>54 (36%)</td>
<td>23 (15%)</td>
</tr>
<tr>
<td>For word processing</td>
<td>152 (100%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>For Internet access</td>
<td>152 (100%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>For spreadsheet</td>
<td>152 (100%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>For records management</td>
<td>122 (80%)</td>
<td>30 (20%)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>For presentations</td>
<td>108 (71%)</td>
<td>44 (29%)</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>For database searching</td>
<td>12 (8%)</td>
<td>34 (22%)</td>
<td>65 (43%)</td>
<td>41 (27%)</td>
</tr>
<tr>
<td>For printing</td>
<td>152 (100%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Advertising</td>
<td>33 (22%)</td>
<td>54 (36%)</td>
<td>43 (28%)</td>
<td>22 (14%)</td>
</tr>
<tr>
<td>Purchasing</td>
<td>17 (11%)</td>
<td>45 (30%)</td>
<td>48 (32%)</td>
<td>42 (28%)</td>
</tr>
<tr>
<td>Information gathering</td>
<td>49 (32%)</td>
<td>38 (25%)</td>
<td>54 (36%)</td>
<td>11 (7%)</td>
</tr>
</tbody>
</table>

* The table above represents multiple responses.

The survey revealed that all the respondents (152; 100%) used ICTs to communicate with fellow colleagues, to access the Internet, for spreadsheet purposes, for printing, for word processing and to disseminate departmental information. When combining positive phenomena in scales 1 and 2 under research purposes, the study was able to conclusively determine that the majority of the respondents used ICTs for research.
purposes (levels 1 and 2: combined total 121 or 80%). An average number used ICTs to retrieve information (i.e. levels 1 and 2: 78 or 51%).

Furthermore, the survey results show that the number of those who used ICTs for records management was significant (combined positive phenomena in levels 1 and 2, which translates to 152 ratings or 100%), while again a total rating of 152 (100%) at the combined scales 1 and 2 illustrates that all the respondents used ICTs for presentation purposes. Also, the results show that an average number used ICTs for database searching (i.e. levels 1 and 2: 46 or 30%). This is also true of those who used ICTs for advertising purposes. This is evident from a total rating of 87 (57%) at the combined levels 1 and 2 on the Likert scale. An average number revealed that they used ICTs for purchasing purposes (levels 1 and 2: combined total 62 or 41%), while 87 (57%) of the respondents used ICTs to gather information.

### 7.3 Frequency of using ICTs

The respondents were required to give responses to the question, “How frequently do you use the following ICT tools and services for work purposes?” A list of ICT tools and services was provided, and they were asked to rate each one of them on a Likert-type scale of 5 (daily), up to 1 (never) as it applied to their situations. The table below provides the responses.

**Table 2: Frequency of using ICTs (N=152)**

<table>
<thead>
<tr>
<th>ICTs</th>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Sometimes</th>
<th>Never</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>%</td>
<td>F</td>
<td>%</td>
<td>F</td>
</tr>
<tr>
<td>Data projectors</td>
<td>-</td>
<td>-</td>
<td>11</td>
<td>7</td>
<td>98</td>
</tr>
<tr>
<td>Laptop</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fax machine</td>
<td>67</td>
<td>44</td>
<td>85</td>
<td>56</td>
<td>-</td>
</tr>
<tr>
<td>V conferencing</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PC</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Internet</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Intranet</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Databases</td>
<td>21</td>
<td>14</td>
<td>22</td>
<td>14</td>
<td>10</td>
</tr>
<tr>
<td>Telephone</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Copy machine</td>
<td>26</td>
<td>17</td>
<td>33</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Printer</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Scanner</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>57</td>
</tr>
<tr>
<td>E-mails</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

Table 2 shows that an average number of participants said they used data projectors monthly (98; 64%). ICT tools such as video cameras (72; 47%) and video recorders (91; 60%) were sometimes used by the respondents. Tape recorders are hardly used in government departments, with a significant number of the respondents (103; 68%) revealing that they had never used such ICTs.
The results further indicate that all the respondents (152; 100%) used laptops, personal computers, printers, Internet, intranet, telephones, e-mail and mobile phones on a daily basis. All the respondents (152; 100%) indicated that they had never used video conferencing in their departments as it is not accessible in the government departments surveyed. When asked to comment on the use of databases, a significant number (99; 65%) also revealed that they sometimes used them for work purposes. With regard to the use of scanners, the majority of respondents (95; 63%) said they sometimes used them. The results show that copy machines are sometimes used in government departments, as evidenced by the significant number of respondents (71; 47%) who revealed that they sometimes used them for work purposes. The majority of the respondents (85; 56%) revealed that they used fax machines daily.

7.4 ICTs which civil servants consider effective in work creativity and productivity

One of the objectives of the study was to establish which ICTs civil servants consider effective in improving work productivity in government departments. Respondents were provided with a list of ICT tools and services and asked to rate them on a Likert-type scale of 1 to 4 as it applied to their situations (1 = very effective; 4 = not effective). Appropriate multiple answers to closed questions were selected by the respondents.

Table 3: Effective ICTs in work creativity and productivity (N=152)

<table>
<thead>
<tr>
<th>ICTs</th>
<th>Very effective</th>
<th>Effective</th>
<th>Less effective</th>
<th>Not effective</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>%</td>
<td>F</td>
<td>%</td>
</tr>
<tr>
<td>Data projectors</td>
<td>76</td>
<td>50</td>
<td>44</td>
<td>29</td>
</tr>
<tr>
<td>Laptop</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Fax machine</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>V conferencing</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>PC</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Internet</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Intranet</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Databases</td>
<td>31</td>
<td>20</td>
<td>87</td>
<td>57</td>
</tr>
<tr>
<td>Telephone</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Copy machine</td>
<td>103</td>
<td>68</td>
<td>49</td>
<td>32</td>
</tr>
<tr>
<td>Printer</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Scanner</td>
<td>99</td>
<td>65</td>
<td>43</td>
<td>28</td>
</tr>
<tr>
<td>E-mails</td>
<td>152</td>
<td>100</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

When asked to rate ICTs in terms of their effectiveness with regard to work productivity and creativity in their respective departments, all the respondents (152; 100%) were of the view that ICTs such as e-mails, printers, telephones, mobile phones, intranet, Internet,
computers, fax machines and laptops were very effective in enhancing work creativity and productivity. The results further reveal that copy machines were very effective in improving work creativity and productivity amongst the civil servants in government ministries (levels 1 and 2: combined total 152 or 100%). When asked to comment on scanners, the majority of respondents (99; 65%) made it known that scanners were very effective in improving work creativity and productivity. Furthermore, the survey shows that an average number of respondents considered data projectors to be very effective (76; 50%).

7.5 Recommendations for improving the use of ICTs in government departments

One of the objectives of the study was to come up with solutions for improving the use of ICTs in government departments. Consequently, the respondents were required to discuss and indicate contextual conditions that need to be adapted in order to enhance the positive consequences of using ICTs in government departments. The respondents generally recommended the following:

- All necessary resources should be provided to ensure that all equipment, including Internet access, functions properly and that administrative functions are performed effectively.
- All equipment and electronic resources should be available and in working order all the time.
- Money should be set aside for the purpose of increasing bandwidth to provide a speedy, reliable and consistent Internet connection.
- Network facilities and computers should be upgraded.
- There must be sufficient and coherent government policies regulating the training of staff in the utilisation of ICTs in the sector.
- ICT access should be provided to all staff.
- The budget for ICTs should be increased.
- More infrastructure should be provided for the effective use of ICTs.
- ICT professional competence in the departments should be increased.
- There must be a clear focus and objectives regarding the use of ICTs.
- Adequate and well-structured planning should be done.
- ICT awareness should be created in the sector.

The most popular recommendations include the need for sufficient and coherent government policies regulating the training of staff in the utilisation of ICTs in the sector. Also, resources need to be provided to ensure that all equipment, including Internet access, functions properly and that administrative functions are performed effectively. The issue of planning revealed here is very important and, as the study has shown, embarking on innovation requires adequate planning.
8 DISCUSSIONS

One of the key areas of social informatics is the use of ICTs in both organisational and societal contexts. It is clear from Table 1 that the civil servants surveyed used ICTs mainly for communication – through e-mails and to disseminate departmental information. Civil servants also used ICTs mostly for spreadsheets, word processing and printing, which is common in an organisational context. Table 1 further shows that some of the ICTs available in government departments have a relative advantage over others. This is evident from the significant number of the civil servants surveyed using ICTs such as e-mails, intranet and the Internet for job execution. However, Table 2 shows that there are ICTs that have no relative advantage, such as video conferencing and data projectors. This could be attributed to a variety of reasons such as irrelevance of these tools to job execution. It is important to note that both of the latter ICTs were available in the government departments surveyed. However, both of them were used relatively little. While one understands the nature of government departments, it should be noted that these ICTs are some of the best innovations civil servants might adopt in order to improve work productivity and creativity in the sector. As Rogers’ theory clearly states, some innovations lie dormant for decades not because they are useless, but because of the users’ perceptions towards that particular innovation.

Table 3 depicts the civil servants’ rating of ICTs in terms of their effectiveness with regard to work productivity and creativity in their respective departments. All the respondents (152; 100%) were of the view that ICTs such as e-mails, printers, telephones, mobile phones, intranet, Internet, computers, fax machines and laptops were very effective in enhancing work creativity and productivity. In support of these results, the Organisation for Economic Co-operation and Development (OECD) (2003) notes that ICTs remain a major positive dynamic force in work productivity and creativity in government departments. In his study, Anandarajan (2002:244) is of the view that ICTs have changed the process of governing in the world. Yong and Koon (2005:11), and Curtin, Sommer and Vis-Sommer (2003:44) have observed that power relations between governments and the governed have been transformed from being mainly vertical and hierarchical and structured along rigid and well-defined departmental boundaries, to being horizontal, networked and participatory.

A study conducted by the OECD (2003) on the issue of ICTs and productivity and creativity confirmed that ICTs can have a positive impact on firms’ performance. By and large, it shows that firms that used either one or more ICT technologies had a higher level of labour productivity than firms that did not use these technologies. Respondents in this current study were asked to comment on contextual conditions that need to be adopted in order to improve the use of ICTs in government departments. The issue of an integrated ICT policy revealed here is a major one, because if the government is serious about improving work productivity and creativity in government departments, an integrated ICT policy is essential. Several studies have underscored the importance
of integrated ICT policies as an empowering instrument at both micro and macro level investment (Van Audenhove 2003:130).

9 CONCLUSION

The aim of the study was to report on the adoption and utilisation of ICTs by civil servants in selected government departments in KwaZulu-Natal. A wide range of ICTs have been adopted to facilitate the sharing and exchange of information in the sector. Interpreted in the light of the diffusion of innovation theory (Rogers 1995:5), the findings suggest that ICTs that were perceived to have relative advantage – and that were more compatible with their existing values, past experiences and needs – were adopted faster. For example, the Internet and computers had a faster rate of diffusion among the respondents than other ICTs, despite the high tariffs. Efforts to expand and modernise ICTs within government departments notwithstanding, their growth has been hampered by a number of constraints and challenges. Among them are inadequate funding, poor infrastructure, inadequate skills development and the lack of a comprehensive national and departmental ICT policy.

While a number of constraints could be addressed at departmental level, others may need to be addressed at national level. There is an urgent need to solve these problems in order to enhance the diffusion of ICTs in the public sector. This requires the intervention and interaction of all stakeholders in the public sector and also in the ICT sector. The impact of ICTs is already felt, particularly in the dramatic reduction in the cost and time involved in storing, processing and transmitting information, leading to a fundamental reshaping of the labour market and society as a whole. ICTs are generating changes and advancing in every area of economic, social and political activity in markets, the private and public sectors and economies in the more and less developed world.

10 RECOMMENDATIONS FOR FURTHER RESEARCH

The study set out to examine the use and contextualisation of ICTs through social informatics analysis amongst civil servants and within the civil service work environment in KZN. However, such an inventory does not reveal the entire extent to which ICTs have diffused into government departments. Four areas that are recommended for further research are discussed below.

10.1 Standards

There are no clear standards or guidelines as to what sort of ICT training is and should be provided to civil servants for them to use ICTs confidently. Research in this area would be useful.
10.2 Satisfaction levels of ordinary staff

This study targeted only managers in the selected government departments. Future studies should focus on the perceptions, experiences and views of ordinary civil servants to complete the picture of social informatics in government departments in South Africa.

10.3 Area of study

Because of the diversity of the public sector in South Africa, the scope of this study was narrowed to selected government departments in KZN. Financial and time constraints also made it impossible to include all the government departments in South Africa. Further research should focus on these logistically excluded areas, or at least ensure that they are included in any major studies.

10.4 ICT policy

The ICT sector is a dynamic field with innovations emerging almost daily. A study is necessary to determine the state of integrated ICT policies at national level that would guide the diffusion and adoption of ICTs in government departments. To date, government has failed to introduce an integrated ICT policy that will address the shortage of ICT skills in the country. This lack of integrated ICT policy in South Africa is the reason why government departments themselves have no ICT policy that will ensure that civil servants have enough access to relevant ICTs in their respective departments.

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