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Web-based technologies as key catalysts in improving work productivity and creativity: the case of the Zululand District Municipality

ABSTRACT

The article reports on the usage, benefits and challenges posed by Web-based technologies to civil servants in Zululand District Municipality. Many countries have invested in information and communication technologies (ICTs) as a means of pursuing their organisational goals. This article is informed by the diffusion of innovation theory. Through a survey, key government departments in the Zululand District Municipality were sampled employing systematic and purposive sampling techniques. Questionnaires were administered to 52 civil servants. Fifty responses were received, which translates to an overall response rate of 96%. The findings reveal that while various Web-based technologies are available in all participating government departments in this survey, the numerous challenges identified indicate that utilisation is still a problem. Yet despite these drawbacks, the respondents expressed great eagerness to enhance their ICT skills in order to use Web-based technologies for their own empowerment and also for work productivity. Despite the constraints and challenges encountered in the application and use of Web-based technologies in these government departments, a wide range of Web-based technologies have been adopted to facilitate the exchange of information in the sector.

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INTRODUCTION AND GOAL OF THE ARTICLE

New technologies, particularly the Internet and the World Wide Web (WWW) are the pillars that now define the emerging information or Internet economy (Ramsay, Ibbotson, Bell, & Gray, 2003). The aim of this article is to map and audit the diffusion and adoption of Web-based technologies in the Zululand District Municipality so as to ensure that the employees increase work productivity and creativity. In order to serve the goal of this article, the following specific objectives were formulated: to establish types of Web-based technologies available in government departments; to determine the rationale for using Web-based technologies; to identify the benefits attached to using Web-based technologies; and, to examine and identify primary factors that impede the effective use of Web-based technologies.

In essence, the problem investigated in this research pertains to the diffusion and adoption of Web-based technologies in the Zululand District Municipality. It has been observed that ICT-use in some of government departments is generally low – both in frequency and variety. For example, a study conducted by the United Nations Educational, Scientific and Cultural Organisation (UNESCO, 1998) on "Harnessing information technology for development in Africa", established that the majority of civil servants mostly use word-processing. While the document notes that civil servants make more use of a range of generic software, such as spreadsheets, the Internet and electronic mails, word-processing nevertheless dominates as the ICT program used. In addition, the document notes that any other forms of ICTs, such as computerconferencing, videoconferencing, to name but two, are used relatively less frequently. The study on Web-based technologies is relevant to modern development, particularly in Africa, where the need for and uses of ICTs are either low or less well developed. In Africa, the embracing of the information and knowledge society as a new way of life is still a major challenge. In terms of human needs, the Web has been acclaimed by numerous researchers as being both fundamental and healthy in public offices where the impact and consequences of information technologies take into account the interaction within institutions and the culture, particularly in government departments (Kling, 1999; Websense Inc., 2000). While these may be true reflections of enhancing the interaction and impact of the Web in developed countries, it is doubtful whether the influence of the Web on work environments such as the civil service – the largest formal occupation in most countries – is being considered in KwaZulu-Natal. Thus, it is doubtful whether the social dimensions of the Web in workplaces are sufficiently accounted for. In order to understand the crux of the problem, answers had to be found to questions such as: What types of Web-based technologies are available in government departments? Why are Web-based technologies used? What are the benefits of using Web-based technologies? What primary factors impede the effective use of Web-based technologies? The respondents were further required to provide recommendations on how to enhance the effective use of Web-based technologies in the participating government departments.

An information economy is defined as an economy with an increased role of informational activities and information industry (Docktor, 2004). It is an economy largely driven by increased access to and use of ICTs, such as the Internet and the World Wide Web (WWW). The integration

of the Internet and other digital technologies in economic sectors is critical in moving a nation towards an information economy. Moreover, countries well poised to participate in the information economy have the requisite skills, supporting infrastructure, and an enabling policy and legislative environment. Docktor (ibid) argues that, for a nation to integrate in the emerging information economy, it must be 'e-ready' in terms of infrastructure, accessibility to the population of digital technologies, and an effective legal and regulatory framework. By and large, the Web can best be described as a multimedia information system implemented on the Internet (Bhargava & Krishnan, 1999: 1). In strengthening this view, Paliouras, Papatheodorou, Karkaletsis, Spyropoulos and Tzitziras (2004) concur that the Web as a source of information can further be turned into valuable knowledge for individuals and organisations and can be useful in helping employees to perform their jobs better. In the same light, Stanton (2002) in his study of professional engineers concluded that employees who accessed the Web more frequently than did their counterparts, made a major contribution to the organisation because they had access to information enabling them to perform their jobs better.

The Web is integrating the world's information economy and, in so doing, has opened up new avenues for increased productivity, greater flexibility and new applications for work (Greenfield & Davis, 2002). Consequently, the use of the Web has many advantages for an organisation, which, amongst others, include information access and information literacy. *Information literacy* can best be described as encompassing the authoring, finding, organisation, research, analysis, assessment and evaluation of information (Rockman, 2004: 7). It is important to note that technology has contributed to an expanded understanding of literacy and technology skills for communicating, investigating, accessing and using information (Holum & Gahala, 2001). However, Rockman (ibid) argues that computer ownership does not guarantee information literacy, and that information technology can be used to manipulate data and create documents without the user demonstrating information literacy skills. By the same token, it has been proposed that Web access impacts positively on information literacy in that it enables quicker research and communication (Websense Inc., 2000).

1. LITERATURE REVIEW

1.1 Impact of ICTs

The information and communication technologies (ICTs) infrastructure directly contributes to the success or failure of any Internet-based initiative (Casarin & Fourie, 2005). Indeed, in support of this view, Brews & Tucci (2003) maintain that the first stage of progression for a firm is to build bandwidth, which extrapolates to various ICT issues. In their study, Casarin & Fourie (ibid) point out that a unique South African challenge for businesses is Telkom's influence on the ICT market and services. The latter authors have critically observed that Telkom, the South African fixed-line telecommunications company, supplies the majority of the ICT services to businesses and enjoys monopoly status in South Africa. It must be noted that companies and interest groups have continually lobbied against Telkom's lack of service provision to the point that they have declared said lack to be one of the major contributors to the lack of Web-enabled businesses in

South Africa. In support of the views of Casarin and Fourie, Lewis (2004) cites anti-competitive behaviour, limited access to infrastructure facilities, telecommunications liberalisation and the formation of electronic commerce (e-commerce) policy as four critical negotiation issues that emerged and these can be identified as having played a central role in either helping or hindering the diffusion of the Internet in South Africa since 1990.

1.2 The characteristics of the Web

The characteristics and role of the Web are widely discussed in many studies. For instance, Ramsay et al. (ibid) and Kling (ibid) concur that the Web is the technology that facilitates the sharing of information. In addition, the Web increases the functionality of communication between different individuals and groups of people throughout the world. The Web furthermore increases productivity because it is a tool for teamwork, a vehicle for organisational communication and a tool to aid the decision-making processes. Teamwork – often referred to as computer-supported co-operative work (CSCW) – is one of the Web's main growth areas. Basically, the assumption in this domain is that the Web may be used to facilitate collaborations over long distances. Frequently, this involves "virtual teams" that spearhead the development of networked organisations. Kling (ibid) further argues that the Web enables people and organisations to extend their abilities in accessing data and in communicating, and also enabling people and organisations to reduce some of the communicational restrictions of space and time. Gurstein (2003) and Kling (ibid) opine that the Web has brought about a dramatic reduction in the cost and time involved in storing, processing and transmitting information, this in turn leading to a fundamental reshaping of both the labour market and society as a whole. They propound that the resultant shift in the structure of skills, work patterns, companies, goods and services makes very different and new demands on workers and employers in terms of flexibility, trust, commitment and the ability to anticipate and harness change. Thus, they argue that the Web has a powerful capacity to shrink distance and improve access to information and services. Hanna (2003) also supports these views in asserting that the Web plays a key role in the economic and social developments of each country by improving the efficiency and effectiveness of public administration, business and other activities.

2. THEORETICAL FRAMEWORK

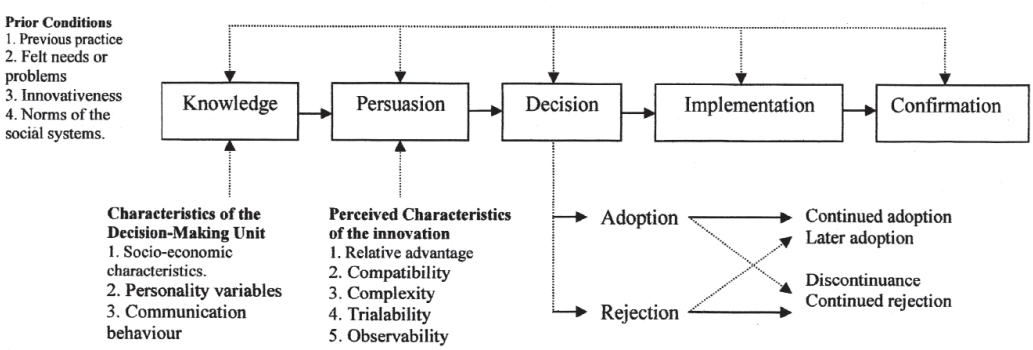
2.1 The diffusion of innovation theory (DoI)

Rogers's framework was found useful because the study sought to understand the diffusion and use of modern ICTs in the government departments under investigation. Clarke (1999) observes that Rogers's theory has been used as the theoretical basis for a number of information systems projects. Rogers (1995: 21) himself pointed out that the theory had been widely applied to investigate the diffusion of organisational and societal innovations. The theory's application to information technology and organisational and societal relations thus made it an eminently appropriate theoretical framework for this article. In addition, the diffusion of innovation theory (DoI) is one of the other theories that explain the acceptance of technology. In his comprehensive work, *Diffusion of Innovation*, Rogers (ibid) defines diffusion as the process by which an innovation

is communicated through certain channels over time among the members of a social system. Rogers's definition contains four elements present in the diffusion of innovation process. In order to understand the definition of DoI one needs to first understand some key terms. The diffusion of innovation theory is essentially a social process in which subjectively perceived information about a new idea is communicated; it rests on the premise that a new idea, practice or object has perceivable channels, time and mode of being adopted by individuals or organisations (Rogers, ibid). Clarke (ibid) adds that the theory purports to describe the patterns of adoption, explains the mechanisms and assists in predicting whether or how a new innovation will be successful. The latter author sums up by stating that the theory is concerned with the manner in which a new technological idea, artifact or technique, or a new use of an old one, migrates from creation to use.

Rogers (ibid) has developed one of the better-known theoretical approaches to diffusion of innovation. According to him, this theoretical framework is helpful when determining the adoption of specific clinical behaviours and when deciding which components will require additional effort if diffusion is to occur. He adds that it includes a consideration of aspects of the innovation (or new technology), style of communication, steps in decision making and the social context. Rogers (ibid) further suggests that those innovations perceived by individuals as having greater relative advantage, compatibility, trial-ability and observability will be adopted more rapidly than those perceived as more complex. As indicated earlier, UNESCO (1998) shares similar sentiments by asserting that some innovations such as word-processing, the Internet and emails are adopted more rapidly. It should be noted that the reason for their rapid adoption is that they are considered as having greater relative advantage, whereas any other forms of ICTs such as, for example, computerconferencing and videoconferencing are perceived as more complex. As a result, such ICTs are used relatively less frequently.

Rogers proposed a model of the innovation-decision adoption process that emphasises the role of individual behaviour in the technology-adoption process (see Figure 1). The model relates to actions and choices during which an individual evaluates a new innovation and decides whether or not to incorporate it into an ongoing practice.



Source: Roger (1995: 163)

Figure 1: The innovation–decision adoption process

In his critique of the theory, Clarke (ibid) argues that the diffusion of innovation theory is at best a descriptive tool, and therefore less strong in its explanatory power, less useful in predicting outcomes and providing guidance as to how to accelerate the rate of adoption. He further argues that doubt exists about the extent to which it can give rise to readily refutable hypotheses in that many of its elements may be specific to the culture in which it was derived (e.g. North America in the 1950s and 60s), hence it may be less relevant in East Asian and African countries.

3. CONTEXTUAL SETTINGS

3.1 Zululand District Municipality

The Zululand District Municipality is one of the eleven district municipalities of KwaZulu-Natal Province. The seat of Zululand is Ulundi, and the majority of its 804 456 inhabitants speak IsiZulu. In addition, this district is part of a larger historical area also known as Zululand (Zulu Kingdom, 2004). According to the latter document, Zululand is surrounded by Amajuba to the north-west, Gert Sibande in Mpumalanga to the north, the kingdom of Swaziland to the north, Umkhanyakude to the east, Umzinyathi to the south-west, and uThungulu to the south. The document further outlines the local municipalities within this district as including the following: Ulundi, Nongoma, Abaqulusi, uPhongolo, and eDumbe. Females (434 244 or 53.98%) are dominant in the district, while there are 370 212 (46.02%) male inhabitants. In terms of race, black Africans (788 551 or 98.02%) are dominant, followed by whites (13 769 or 1.71%) (Zulu Kingdom, ibid).

4. METHODOLOGY

A survey was used to target key government departments. Because the public sector in South Africa is both diverse and enormous, the study narrowed its focus to government departments in KZN. To be more specific, five (5) district municipalities out of eleven (11) were selected, namely: uMgungundlovu; uMzinyathi; Zululand; uThungulu; and Sisonke. In each of these districts, four government departments were targeted: the departments of Arts and Culture, Home Affairs, Education, and Health. These departments were sampled using purposive and systematic sampling techniques. The three stages used in the sampling process included the identification of widely dispersed and service-intensive departments; the categorisation of personnel in the selected departments into top-, medium- and lower-level management; and, lastly, the division of the service areas into rural or urban-based centres. In order further to increase the chances of obtaining a representative sample, systematic sampling was applied. In this technique, five (5) out of eleven (11) suitable district municipalities were selected by choosing every second district from a list. This sampling technique also helped to prevent bias in the selection process. The sample size for the whole study was two hundred and sixty (260) managers. One hundred and fifty two (152) questionnaires were completed and returned. This article reports on the findings obtained from the Zululand District Municipality. In this district, fifty two (52) self-administered questionnaires were handed to the respondents for completion. The overall response rate was fifty (96%). The data collected were analysed using thematic categorisation and tabulation, and the findings were presented descriptively.

5. RESULTS AND DISCUSSIONS

5.1 Demographic profile

Of the 50 respondents who answered the questionnaires, the majority (66%) were males. There was a fairly even spread of adults, mostly between the ages of 31 and 59. In like manner, there was a fairly even spread in respect of education levels, these comprising junior degrees (66%) and Honours degrees (33%). All the respondents had access to ICTs. The majority of the respondents were employed in the Department of Education, followed, respectively, by the departments of Health, Home Affairs, and Arts and Culture.

5.2 Diffusion of Web-based technologies

In order to be utilised, Web-based technologies need to be accessible. In this connection, respondents were required to indicate the Web-based technologies to which they had access. The respondents unanimously noted having access to the following Web-based technologies:

- E-commerce
- E-banking
- Electronic mails client
- WAP and other mobile technologies
- Online databases
- E-learning

It was not surprising to learn that respondents had access to all of the Web services listed above. This was probably attributable to the fact that most of the respondents were based in the urban areas and thus had physical access to ICTs. To top it all, they were all holding management positions in their respective departments. It should be noted that all government ministries in South Africa have websites allowing the citizens to log in and obtain the latest information about the services offered by different departments. ICTs provide citizens with better information and new knowledge so that they can make faster, more informed decisions possible. In their study, Kuye & Naidoo (2003) concur with the aforementioned views by stating that ICTs make communication possible between different entities, namely: businesses, government, and citizens. A study conducted by Ghana Resources Centre (2008) points out that it is very important that government employees equip themselves with the latest ICT technology in order to enjoy the benefits brought by technology. In a study reported in the Data Protection Staff Handbook (2003: 1) it was pointed out that ICT tools and services, such as the Internet, can deliver important business opportunities and advantages when utilised properly and responsibly.

5.3 Reasons for adopting Web-based technologies

Respondents were asked to discuss the uses to which Web-based technologies were put in their departments. Respondents were provided with a list of possible reasons for adopting Web-based

technology and asked to rate each on a scale of 1 to 5, depending on how applicable it was to their situation (1 = not at all applicable; 5 = very applicable). Table 1 reflects both the number of responses for each rating and the corresponding percentages.

WEB TECHNOLOGY	1	2	3	4	5
E-commerce	27; 54%	11; 22%	07; 14%	03; 6%	02; 4%
E-banking	30; 60%	09; 18%	06; 12%	03; 6%	02; 4%
E-learning	02; 4%	04; 8%	07; 14%	12; 24%	25; 50%
Emails	-	-	-	02; 4%	48; 96%
Info. dissemination	-	-	-	03; 6%	47; 94%
Marketing	12; 24%	09; 18%	06; 12%	10; 20%	13; 26%
Info. gathering	08; 16%	11; 22%	06; 12%	14; 28%	11; 22%
Info. retrieval	03; 6%	06; 12%	10; 20%	13; 26%	18; 36%
Research	02; 4%	04; 8%	21; 42%	13; 26%	10; 20%
Advertising	03; 6%	04; 8%	07; 14%	10; 20%	26; 52%
Purchasing	15; 30%	12; 24%	16; 32%	05; 10%	02; 4%

Table 1: Reasons for adopting Web-based technologies (N=50)

Scrutiny of the data shows that the most important reason for adopting Web-based technologies in government departments was to communicate by means of emails (a total rating of 100% at the combined level of 4 and 5); and for information dissemination (a total rating of 100% at the 4 and 5 level). In addition, the findings revealed that Web-based technologies were used for many purposes. These activities included information gathering, advertising, marketing, purchasing, e-commerce, and electronic banking. These findings tie in well with the study on the impact of the Web-based technologies conducted by Kling (ibid) who notes that the Web has become one of the world's leading communication mechanisms. The findings confirm what Rogers's theory emphasises that those innovations perceived by individuals as having greater relative advantage, compatibility, trial-ability and observability will be adopted more rapidly than those perceived as being more complex. Thus, some ICTs in government departments are used relatively less frequently compared with other ICTs, such as electronic mail.

5.4 The benefits of Web-based technologies in government departments

On this theme, respondents were asked to reflect and discuss the benefits of Web-based technologies in government departments. The relevant data revealed the most popular benefits indicated by the respondents to include the following:

- Enhanced information access
- Communication via emails

- Increase in computer literacy
- Pushing information over the Internet, e.g. regulatory services, general holidays, public hearing schedules, issue briefs, notifications, etc.
- Two-way communication between the agency and the citizen, a business, or another government agency; users able to engage in dialogue with agencies and post problems, comments, or requests to the agency
- Conducting transactions, e.g. lodging tax returns, applying for services and grants
- Governance, e.g. online polling, voting, and campaigning
- Enhanced efficiency
- Improved services
- Better accessibility of public services
- More transparency and accountability
- More efficient public services and significantly reduced administrative burden
- Improved channels of communication between citizens and all levels of government
- Lower costs

As indicated earlier, in terms of human needs, the Web has been acclaimed by numerous researchers as being both fundamental and healthy, especially in public offices, where the impact and consequences of information technologies takes into account the interaction within institutions and the culture, particularly in government departments (Kling, ibid; Ramsay et al., ibid). In support of this view, Kling (ibid), in his study, asserts that there is a correlation between the use of the Web and an increase of productivity and creativity in the workplace. A study conducted by Porter (2001: 74) describes the use of the Web in business as an evolving information technology (IT), which is used as the integrating catalyst across the value chain together with other IT applications, and which eventually integrates business processes beyond the boundaries of the firm. By and large, the Web could be used pervasively by businesses to redesign, automate and integrate their business processes. In their study, Casarin and Fourie (ibid) point out that the diffusion of practical Web applications throughout South African business may indeed be an immediate but also a long-term challenge.

5.5 Web usage and increase in productivity and creativity in the workplace

The study sought to establish whether Web-based technologies had increased the respondents' level of work productivity and creativity. As indicated earlier, some studies revealed that there was indeed a link between the use of Web-based technologies and the increase of work productivity and creativity (Kling, ibid). The respondents were provided with possible options to choose from and were then asked to rate each on a scale of 1 to 5, depending on how applicable the option was to their situation (1 = Strongly disagree; 5 =Strongly agree). Table 2 shows the number of responses for each rating and the corresponding percentages.

WEB TECHNOLOGIES	1	2	3	4	5
E-commerce	31; 62%	09; 18%	05; 10%	03; 6%	02; 4%
E-banking	27; 54%	14; 28%	04; 8%	03; 6%	02; 4%
E-learning	22; 44%	10; 20%	05; 10%	09; 18%	04; 8%
Emails	-	-	-	06; 12%	44; 88%
Info. dissemination	-	-	-	08; 16%	42; 84%
Info. retrieval	08; 16%	21; 42%	13; 26%	06; 12%	02; 4%
Online databases	03; 6%	07; 14%	09; 18%	08; 16%	23; 46%
Online sales and service information	03; 6%	07; 14%	09; 18%	08; 16%	23;46 %
Forecasting systems with suppliers	02; 4%	05; 10%	08; 16%	23; 46%	12; 24%
Linkages of purchase	20; 40%	05; 10%	08; 16%	06; 12%	11; 22%
Online sales channels	22; 44%	04; 8%	05; 10%	07; 14%	12; 24%
Products catalogues	30; 60%	05; 10%	02;4 %	04; 8%	09; 18%
Stock availability	26; 52%	06; 12%	03; 6%	05; 10%	10; 20%
Customer self-service	33; 66%	07; 14%	05; 10%	03;6 %	02; 4%
Pricing	11; 22%	15; 30%	13;26 %	08; 16%	03; 6%

Table 2: Web-usage and increase in work productivity and creativity (N=50)

Table 2 reflects that most respondents indicated that the use of emails and information dissemination had increased their work productivity and creativity (a total rating of 100% at the combined levels of 4 and 5). The findings concur with those of the study done by Kling (ibid) regarding the correlation between use of the Web and the increase in work productivity and creativity. Malik (2006: 6) and Deitel and Deitel (2005: 5) advance the aforementioned views by pointing out that the Web has become one of the world's leading communication mechanisms.

5.6 Factors that impede the effective use of Web-based technologies

The respondents were asked to discuss and reflect on the barriers that impede the effective usage of Web-based technologies. The respondents identified the following problems: there was a lack of sufficiently coherent government policies for regulating the training of staff in the utilisation of the Web in the public service; there was a shortage of funds required to implement existing policies and a shortage of expertise on the Web; there was a lack of access to ICTs; the cost of ICTs was prohibitive; there was a lack of ICT infrastructure and of professional competence; employees were negatively disposed towards technology; and, there was a lack of technical expertise. The respondents further revealed that there was no clear focus or clear objectives regarding the use of ICTs; there was a lack of ICT skills among staff; there was staff resistance to the use of ICTs; and; problems related to predicting the true costs of ICT-related activities existed.

The findings suggest that there is a lack of Web skills in government departments. The findings corroborate those of Mutula and Van Brakel (2006) who observed that all over the world the digital skills gap is a growing concern. Further strengthening the above view, De-Kare Silver (2000), in a study on the electronic selling of services and products, identified the following skills-related obstacles: inadequate human resources; lack of technical capabilities to manage online transactions; lack of skills among the employees and lack of awareness of the benefits - to the business - of e-commerce. McConnell International (2000) on the other hand, notes that the world faces a need for ICT skills, and that shortages are greatest in such areas as local-content creation, and in software, hardware and communication engineering. Similarly, the findings indicate that among the obstacles to the greater and more effective adoption and utilisation of digital technologies are lack of appreciation of the contribution of such technologies to business, lack of appropriate internal IT resources and skills. It is also important to note that the lack of ICT knowledge among senior management is one of the biggest internal barriers to utilise Web-based technologies effectively.

Relevant skills in an increasingly Web-based environment have become critically important. The World Summit Information Society Civil Society Working Group (2004) acknowledges the importance of the adequate development of human capacity so as fully to exploit the benefits of modern digital technologies such as the Internet and WWW. Similarly, and as indicted earlier, McConnell International (ibid) in advancing these views, points out that the world faces a need for digital skills that include complex technology projects, policy analysis, local content creation and communication engineering. The importance of having the requisite skills to function in a Web-based environment can scarcely be over-emphasised. This issue is highlighted by The World Economic Forum (2003) when it points out that when skilled people have access to technology, this significantly enhances their productivity and the economy may then grow by leaps and bounds.

5.7 Recommendations towards improving the use of Web-based technologies

The respondents were required to discuss and indicate contextual conditions that need to be adapted in order to enhance the positive consequences of Web-based technologies in government departments. The respondents offered the following suggestions:

- Provide resources to ensure that all equipment, including Internet access, is functioning properly and that administrative functions are performed effectively.
- Make available and maintain all equipment and electronic resources at all times.
- Set aside money for increasing the bandwidth to provide a speedy, reliable and consistent Internet connection.
- Provide fast modems in order to access the Web successfully.
- Upgrade existing network facilities and computers.
- Provide the civil service with sufficiently coherent government policies that regulate the training of staff in the utilisation of the Web.
- Train staff on how to use Web-based technologies.

- Provide Web access to all staff.
- Increase budgets for ICTs.
- Provide more infrastructure for the effective use of Web-based technologies.
- Increase Web professional competence.
- Provide both a clear focus and objectives regarding the use of ICTs.

6. CONCLUSION

The article set out to map and to audit the diffusion and adoption of Web-based technologies in government departments in the Zululand District Municipality in KZN. In this connection, the article has demonstrated the importance of Web-based technologies in government departments and also the various interventions required to propel civil servants effectively to participate in the emerging Web economy. Yet, for this to be realised, a number of measures are required. These include, amongst others, the enactment of an enabling policy and legislative framework to cater for skills development, the improvement of infrastructure (i.e. telecommunications and power supply) and an adequate policy framework. Web-based technologies undeniably play a pivotal role in speeding up the flow of information and knowledge in government ministries, and they further transform the way in which the government and citizens can directly interact effectively and efficiently. Transparency, efficiency and effectiveness should be the new yardsticks for public organisations. It should be noted that transparency and universal access to information are necessary for interactive creativity and world solidarity. By and large, the Batho-Pele principles – openness and transparency, service standards, access, information availability and delivering the best results – need to be driven hard and taken to heart by all civil servants in order to be practised by each and every government – at whatever level – in South Africa. There is no doubt that civil servants, more specifically those in South Africa, have been sensitised about the value of Web-based technologies in improving work productivity and creativity, administration and the planning of government.

The article established that the most important reasons for adopting Web-based technologies in government departments were communication via emails, information dissemination, and electronic learning. The findings confirm what the diffusion of innovation theory emphasises: those innovations perceived as having greater relative advantage, compatibility, trial-ability and observability, will be adopted more rapidly than will those that are more complex. It thus follows that, by comparison, some Web-based technologies are used relatively less frequently in government departments than others, such as electronic mail.

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