Explaining the Use and Non-Use of Smart Cities Services in Johannesburg: Residents' Perspectives

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Abstract: One of the aims of the development of Smart Cities initiatives is to provide electronic services that address residents' information needs. Local governments in South Africa have realised that e-government can improve service delivery. There are currently government e-services that are designed to meet residents' information needs and transform Johannesburg into a Smart City. However, local governments face the challenge of deficiencies in the use of government e-services. In order to ensure that all residents benefit from Smart City services there is a need to understand the use and non-use of these services. The paper reports preliminary results of the research being done in Johannesburg to understand what makes people use or not use Smart City services. In this context, Smart City services refer to government e-services and city Wi-Fi. The research is addressed from an interpretive perspective employing qualitative methods. The theoretical framework of government websites utilization developed by Wang (2014) is used as a theoretical grounding. Data was collected through in-depth semi-structured face-to-face interviews with open-ended questions and analysed by use of open and closed coding techniques. At the time of writing the paper, nine interviews were concluded. The results show that value, effectiveness, user needs, alternative sources, access, awareness, and trust significantly influence residents' decision to use or not use Smart City services. The study confirms and extends Wang's (2014) theoretical framework to make it applicable in other contexts. These results are significant to both theory and practice.

Keywords: Smart Cities, Smart Cities' Services, Government e-services, e-government.

Introduction

The concept of a Smart City has increasingly attracted academics and practitioners' attention (Lee & Lee, 2014). Different authors view a Smart City through different lenses depending on their field of study (Backhouse & Cohen, 2014; Hollands, 2008). Therefore, there are currently different perspectives of a Smart city. Nevertheless, the idea that Smart Cities initiatives can facilitate the development of Smart City services that meet residents' information needs and ensure a comfortable, innovative, liveable environment for the residents has gained acceptance and it is appealing (Allwinkle & Cruickshank, 2011;Caragliu, Del & Nijkamp, 2011). In the context of this study, the term 'Smart Cities services' refers to e-government electronic services (e-services) provided through government websites (Hollands, 2008; Lee & Lee, 2014), and internet connectivity around the city. Several authors affirm that the extent to which the provided e-government services meet residents' information needs and preferences is one measure of the success of Smart Cities initiatives (Giovannella et al., 2013; Lee & Lee, 2014). Lee and Lee (2014) establish that local governments in cities around the world are taking steps to develop and implement Smart Cities initiatives with the aim of making services reach more people in the city. Likewise, the city and provincial governments in South Africa have realised the need to implement Smart Cities initiatives in cities in South Africa (Das, Burger & Eromobor, 2009; Kaisara & Pather, 2011; Mutula & Mostert, 2010).

E-government services in Johannesburg South Africa

In an attempt to transform cities into Smart Cities, governments are increasingly developing and implementing government e-services (Lee & Lee, 2014). The aim is to

provide efficient and effective services that reach people in different societies and areas. E-government initiatives have the potential to be an equalizer by making information services available to all residents from different societal levels and communities. On the other hand, because e-government services can only be accessed by residents who have internet connectivity and the resources required to connect to the internet, they also have the potential to create inequity. Residents who are unable to use these services may be disadvantaged because they may not get the services they need or they may be getting the services in a costly way, in terms of transport and time to access the services offline.

In Johannesburg, a city of South Africa, several government websites have been designed to deliver government information and services to residents and to strengthen the interaction between local governments and residents. The government websites include the city of Johannesburg website (COJ) which offers a wide range of services that include: registering an email address and receiving rates, water and electricity invoices online and making payments. The other website is the Department of Home Affairs website; this website provides information about passport, identity document applications, and any other information related to Home Affairs. Another example of a government website is the Johannesburg traffic fines website; e-services provided here include checking fines online and making payments.

The city government has also embarked on broadband infrastructure investments in an attempt to provide internet connectivity to the residents (Kaisara & Pather, 2011; Mutula & Mostert, 2010). The hope is that internet connectivity will allow all residents to have access to such government e-services (Mutula & Mostert, 2010). The city government aims to ensure that the delivery of e-services is equitable. There are currently several areas that provide free internet connectivity in the form of 'Wi-Fi' to the residents in Johannesburg. Wi-Fi is defined as wireless internet connectivity, and Wi-Fi hot-spots refer to places that provide wireless internet access (Bernaschi et al., 2008).

Problem Statement

Despite South Africa's significant investments in ICT with the aim of providing internet connectivity and government e-services to the residents, several studies have reported a low use of these services (e.g. Bwalya & Healy, 2010; Kaisara & Pather, 2011; Maumbe et al., 2008; Mutula & Mostert, 2010).

Reports from the Gauteng City Region Observatory (GCRO) Quality Of Life (QOL) surveys were used to identify residents' use of e-government and the internet. The results from the GCRO 2013 QOL survey indicate that 63.9% of residents had not accessed the internet in the past four weeks, and 97.1% of residents do not use the internet to obtain government information. These reports indicate a low use of the internet and a low use of e-government information services. GCRO was established in 2008 as a partnership between the University of the Witwatersrand (Wits), University of Johannesburg (UJ), and the Gauteng Provincial Government (GPG). One of the specific roles of the GCRO is to collect and store strategically useful data and surveys. These reports illustrate a mismatch between investments in and the use of e-government services.

It is unclear why residents do not use the internet and the provided e-government services. In their study, Kumar and Best (2007) identified a positive relationship between the presence of internet facilities in the villages in India and the use of the government e-services. While this seems to be a reasonable co-relation, there is currently no empirical evidence indicating that the same relationship applies to residents' of Johannesburg. In this case, further measures that can improve residents' use of internet connectivity around the city and government e-services websites should be explored.

In order to make sure that all residents get to benefit from e-services, we need to understand what makes people use or not use free Wi-Fi services and government e-services. This argument has support from several studies that affirm that the success of Smart Cities service initiatives is dependent on the engagement and participation of the residents (e.g. Carter & Belanger, 2005; Giffinger et al., 2007; Hung et al., 2006).

This study specifically focuses on residents' use and non-use of these two services: the web-based government e-services, and the free Wi-Fi services. These two services are selected because they address two important aspects of the Information Systems (IS) perspective of Smart Cities: digitally connected living and informated living (Backhouse & Cohen, 2014). The concept of an informated business was first introduced by Zuboff (1988) and it emerged from the idea that information systems automate manual systems and in the process, generate information that supports decision making processes and daily activities. Informated living is where information systems are used to support decisions and actions in people's daily lives and they generate further useful information in the process. Being digitally connected is a prerequisite for informated living. Digitally connected living is defined as the extent to which residents' have access to all resources required to access and use the internet and e-services (Backhouse & Cohen, 2014). The use of web-based government e-services is an example of informated living and the use of Wi-Fi around the city is an example of the digitally connected living dimension of Smart Cities.

These concerns translated into the following central research question: How can we explain the use and non-use of Smart City services? And the following sub-research questions: How can we explain the use and non-use of Wi-Fi services around the city? How can we explain the use and non-use of government websites?

Studies on the Use of E-government Services

Several studies have investigated the use of government e-services to identify the reasons that affect residents' use and non-use of the provided government e-services (e.g. Carter & Belanger, 2005; Lean et al., 2009; Lopez-Sisniega, 2009). The majority of these studies have been conducted from the positivist research paradigm employing quantitative research methods. Quantitative user centered models in Information Systems such as TAM, DOI, and UTAUT were used in researching government e-service use.

These studies identified a variety of factors that influence the use of government e-services. For example, in Carter and Belanger's (2005) study the following variables were found to have a major influence on citizens' decision to use or not use e-government services: perceived ease of use, compatibility, and trustworthiness. The findings of a study conducted by Lopez-Sisniega (2009) show that trust in the internet, trust in the government, perceptions of convenience, perceptions of compatibility, internet access, perceptions of ease of use, and perceptions of relative advantage influence citizens' decision to use e-government services. The results of Lean et al.'s (2009) study reveal that perceived usefulness, perceived relative advantage, and perceived image have an influence on residents' use of e-government services.

However, because the studies borrowed theoretical variables from existing theories and models, some of which were originally focused on business, the studies overlooked the contextual conditions of e-government (Wang, 2014). For example, models and theories such as TAM, UTAUT, and DOI do not address the concept of residents' access to the provided e-services. In addition, the trust theories address trust in a business context, not trust as it applies in government. Because of the model testing approach, the studies did not contribute new theoretical constructs to explain the government e-service phenomenon (Wang, 2014). From the review of past research it is evident that the use of government e-services is an area that can benefit from studies that employ an interpretive paradigm and qualitative methods.

Theoretical Framing

The theoretical framework of government website utilization proposed by Wang (2014) was selected as the most appropriate theoretical framework to ground the current study because it has been developed from an interpretive perspective, it is an e-government theoretical framework, and it considers phenomenon in a social context. By iterative data comparison and analysis, Wang (2014) identified four core concepts that explain the use of government websites: value of website, effectiveness of government websites, user needs, and

alternative information sources. Value was identified as the essence of government websites use and a central status of the relationship network of the four core concepts (see figure 1). Each concept is made up of sub-categories and there are dimensions for each sub-category. The framework is rooted in the assumption that reality is subjective and differs from person to person.

The theoretical framework provides sufficient richness to enable the researcher to cover the phenomenon under investigation. It was used as an initial guide to design interview questions. Throughout the data analysis phase, the framework helped the researcher make sense of the collected data and the concepts from the framework were used as broader themes and codes during the coding process.
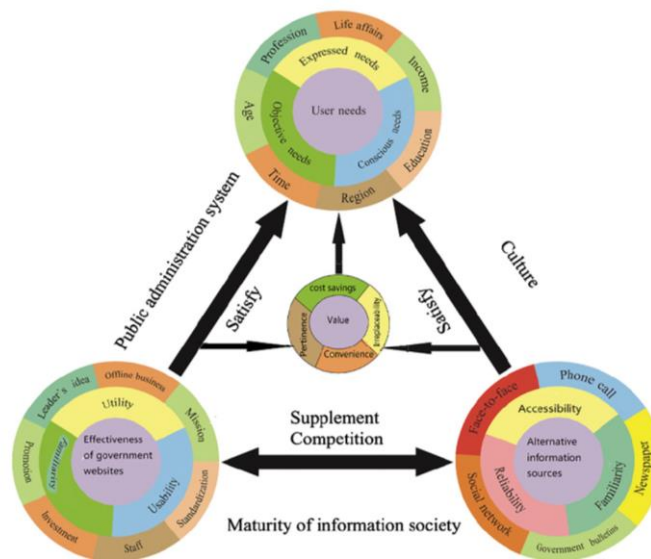

Figure 1. The integrated theoretical framework of government website utilization proposed by Wang (2014).

Research Method

Research on the subject of e-government has extensively used quantitative research design, primarily surveys (Wang, 2014). Theory testing does not allow for the discovery of new constructs that may be relevant and existing models may be missing important constructs. For these reasons the current study adopts an interpretive qualitative approach to surface other possible concepts. The aim is to understand the phenomenon through meanings that people assign them, and to confirm and extend Wang's (2014) framework in the Johannesburg context. A small sample was selected for in-depth interviews. There is no intention to generalize from this sample, but to use it to identify additional constructs in the model.

This paper reports preliminary results of a larger research project being conducted in Johannesburg to understand what makes people use or not use the provided Smart City services. A purposive sampling strategy was used to select participants with the desired characteristics and sampling was done in accordance with the matrix provided in table 1. Wang's (2014) framework identified age, education level, profession and income as key dimensions in understanding different user needs. In order to make it easy to identify potential participants without invasive questioning, we opted to select based on employment status as a combined indicator of profession and income level. So the three dimensions age, education

level and employment status were used to inform the sampling strategy as represented in the matrix. Wang's (2014) framework also included other characteristics such as time, region and life affairs, which we omitted in order to simplify the study. The study was conducted within a relatively small region, at a single point in time and it would have been difficult to understand life affairs at the point of selecting participants, although discussions of life affairs did emerge during the interviews. Although it is often expected that race should be included as a characteristic in studies in South Africa, this was not a factor in Wang's (2014) model and, as class increasingly competes with race as a defining characteristic of South Africans in cities (Schensul & Heller, 2011), this was not a consideration for our study.

Data was collected through semi-structured interviews and data collection ended when a pattern of evidence that addresses the research question was reached. At the time of writing the paper, nine of the twelve interviews were concluded. The profile of the respondents, in accordance with the sampling matrix, is represented in Table 1. Pseudonyms are used for each respondent and the pseudonyms presented in Table 1 reflect the characteristics of the nine residents interviewed.

Table 1: Sampling Matrix and Respondents' Profile

	Employed		Unemployed	
Education level; Age	18-34	>35	18-34	>35
Less high school education	Thabo		Isaac	
High School education	BraGee		Max	
University degree/higher learning institution degree	Andile, Maria	MrsJane	Samie	Jacob

The research participants were over the age of 18. Informed consent to conduct and record the interview was obtained before each interview. Anonymity was ensured by not requesting the respondents to provide any identifying information and by using pseudonyms when reporting the results. The research has been approved by the university research ethics committee (non-medical), protocol number: H15/06/81.

The data analysis process was divided into three stages: a preliminary processing of data, closed coding, and open coding. These stages were conducted iteratively through continuous comparison and analysis of data. At the preliminary processing stage, the researcher personally transcribed each interview one at a time. Listening to audio recordings while transcribing gave an opportunity to pay close attention to data and understand fragments of data before attaching codes. Closed coding was based on the concepts identified in Wang's (2014) framework: value, effectiveness, user needs, and alternative information sources. The above mentioned core-concepts were used as broader themes; properties of each core concept were used as sub-codes for a more detailed closed coding analysis. Open coding was introduced to exhaustively code the interview transcripts. The aim was to uncover new concepts that are not represented in the theoretical framework.

Discussion

The research aim of the current study is to explain the use and non-use of Smart City services in Johannesburg, a city of South Africa. The study seeks to identify factors that influence residents' decision to use or not use Smart City services. In the current study, Smart City services were scoped as internet connectivity around the city and government e-service websites. For effective data collection, the central research question was initially divided into

two sub-questions: explaining use and non-use of Wi-Fi services around the city, and explaining use and non-use of government e-service websites. However, the use of government e-service websites appeared to be closely related to internet connectivity. Andile (Line24) a frequent user of government Wi-Fi services said:

"people don't use government e-services because they don't have connectivity, so if they roll-out free Wi-Fi, especially in townships and rural areas, it will help the government to connect to the people on an easier basis".

Additionally, in saying:

"It will only be used by people who are able to use it and those that have access to the internet, but those people who don't have access to the internet, they will not be able to use this things"

Mrs Jane (Line22) appeared to be building on the argument that access to internet connectivity influences the use of government e-service websites significantly. Kumar and Best (2007) also identified a positive relationship between the presence and use of internet facilities and the use of government websites in a village in India. This explains why similar concepts emerged for the two sub-questions and the concepts discussed here address the use and non-use of city Wi-Fi and government websites.

Core Concept: Value

The results confirm Wang's (2014) argument that value is one of the concepts that influence the use of e-government services. Even though in the current study qualitative data produced a richer explanation of why value might influence use, the findings are quite similar to Park's (2008) report that economic value and personal value can lead residents to use e-government services. As reported by Park (2008) personal value could be associated with convenience and economic value is related to finances. Four sub-categories of value: pertinence, convenience, cost saving, and irreplaceable were confirmed. In saying:

"When I come to work I use the bus, so I use the city of Johannesburg Wi-Fi available at the rea-vaya stations, it is fast, it is free."

Andile (Line7) implies that he uses the Wi-Fi service because it is convenient for him at that point. Bra Gee (Line22) commented:

"But if I had to look-up something on utube you know like watching a video clip for like 5minutes, it takes about 100MB and that costs like 30 rand so yah I would use free Wi-Fi.",

This suggests that he would use free Wi-Fi to save on his data costs. In saying:

"They should sell the importance of using e-services and tell people that they can get a response right there where they are instead of using transport money, petrol money to reach offices."

Jacob (Line38) suggests that cost savings might encourage more people to use the websites. When asked if she would use the government websites if other means of accessing information did not exist, Maria (Line53) said:

"I would use them when I am stuck, I have nothing else to use, because that would be the only option available to me, it is replaceable and the other means are more supportive".

On the other hand, Andile (Line18) commented:

"If I had to choose I would take the city of Johannesburg Wi-Fi, yah like it works, and it is better compared to other networks, your Vodacom's and your MTN's. I mean those guys are slow hey, but the city of Johannesburg one is fast and it is always there".

Maria and Andile talk about Smart City services being interchangeable and their choice may depend on the quality of service they get from the source of service they choose. They could be referring to service quality in terms of support of government websites and the speed of the internet. Maria feels like the Wi-Fi services are interchangeable and that is one of the reasons why she has not used them, Andile (a frequent user of city Wi-fi) has a strong opinion that the city Wi-Fi is irreplaceable because other internet service providers are slow and that significantly influences his use. Max's (Line14) comment:

"They should identify their target market and carter to the needs of their market."

is consistent with Wang's (2014) definition of pertinence which indicates that government e-services are developed to meet the needs of their target users and local governments should first identify their target users and the needs of these users.

Core Concept: User Needs

User needs is one of the core-concepts initially adapted from Wang (2014). In the current study, data did not suggest that user needs can be divided into three levels: objective needs, conscious needs, and expressed need as in Wang's (2014) study, nevertheless, some of the initial subcategories of user needs: profession, education, finances, region, age, and timing of the need were confirmed. For example, in saying:

"If I am in a city hotspot where Wi-Fi is available, chances are I am not going to use it because I am not there to be on the internet. Like when I am at the mall, I am not there for internet, I am there for shopping, so at that point in time when they are available, I don't really need them" (Max, Line2)

Max implies that if the Wi-Fi was available at the time when he needs it then he would use it. This supports the claim that timing of the need influences the use of Smart City services. Jacob (Line22) commented pensively:

"They should not assume that everyone knows how to use these services. We come from different levels of education, education plays a role"

In addition, school and personal interests emerged as new sub-categories that influence residents' use of smart city services. Jacob (Line24) commented:

"It is what affects me on the ground that influences my need to find information. Load shedding affects me, if I am from work I go home and it is dark but when I left they were on, then I will be affected"

This suggests that his personal needs influence his need for the services. Samie's comment that:

"I am not sure if I would use any of the services, because I mean I don't have to deal with paying rates and water because I am living at home, so my parents do that. And building plans as well, I don't want to deal with it"

echoes this. It is hence understandable that for people who do not own property for example, access to a web site dealing with property services may not be necessary. With regard to school influencing the decision to use, Maria (Line17) commented:

"Some students might use the Wi-Fi to do their assignments, and use the websites to find information for their research."

Naugle (2011) also found that user needs influence the use of e-government services and user needs was also not divided into levels in his study.

Core Concepts: Effectiveness of Smart City Services and alternative information sources

Effectiveness of smart city services and alternative information sources were also evident as the core concepts that influence residents' decision to use smart city services. Consistent with Wang (2014), familiarity, utility, and usability emerged as sub-categories of the effectiveness core-concept. Max (a non-user of government Wi-Fi) thoughtfully said:

"I think when you use the Wi-Fi, there will be connectivity issues, well it will connect but it will not connect often, and you can't really do anything, so it's not really helping me, there are problems and they do frustrate". (Max, Line5)

This suggests that he does not use the service because he does not find it effective. Some informants compared the city web sites with social media and news media to highlight their expectations for convenience and their perceptions of reliability. In saying:

"With twitter I don't need to go and check, it just feeds into my phone" (Maria, Line39)

Maria is implying that twitter is more convenient because the information is fed to her without her having to take action. Additionally, Bra Gee (Line32) commented:

"News24 to me is very reliable, it is also truthful, information you get is very accurate, and it's not biased, it does not favor anyone, it just represents news as they are".

In doing so he emphasises that he seeks information from sources that he considers reliable and unbiased, with the implication that city sources may not meet these criteria.

This evidence supports common themes in literature around effectiveness, usability, utility, and familiarity. These concepts have been fully investigated by several authors (e.g. Shackel, 1991; Dillon & Morris, 1999; Wang, 2014). For instance Shackel (1991) used properties such as effectiveness and utility to measure usability. Dillon and Morris (1999) extracted three pillars that underpin usability: effectiveness, efficiency, and satisfaction. In his study, Wang (2014) suggested that utility, usability, and familiarity can be used to measure effectiveness. A common grounding here is that all these concepts can be used to explain residents' decision to use or not to use e-government services.

Core Concept Awareness

Some new concepts (awareness, trust, and access) that provide a more insightful explanation of the use of smart city services were discovered. Among them awareness emerged as the most significant concept. In-fact all the respondent strongly indicated that awareness plays a major role as an essential motivator for the use of city Wi-Fi and government websites. This means that people may use city Wi-Fi and government e-services if they are aware of them. Once they are aware of them, they will assess their value, effectiveness, trustworthiness, whether they have access to them or not, and they will make a decision whether to use or not to use them. For example, Jacob (a non-user of city Wi-Fi) commended:

"I don't' know of them, for now I only know the one at the taxi rank, there is access there. I don't know where others are. I will look up on the internet to check how far is the roll-out then I will know of them and I will be aware of whether I have access or not". (Jacob, Line16)

There are three sub-categories that make up the awareness core concept. These are: advertisement, knowledge, and findability. Bra Gee (Line36) angrily commended:

"They do not tell us they exist, how are we supposed to know? I don't know I have never seen the websites anywhere, they can't just sit there on the internet expecting to magically be found",

In saying this Bra Gee is implying that he does not use government websites because they are not advertised enough and they are not easy to find. This claim is supported by Andile (Line64) who commented:

"I think it is about advertising, Yah I think government need to go on that huge advertising drive, they should just go out there and challenge the perceptions that we have as people. I think if they do that they will find that people will actually use city Wi-Fi and websites more".

Thabo (Line11) also said:

"Now we have free newspapers in Soweto, so if maybe they could advertise it in the newspaper, because I mean we get the newspapers for free, so information about government websites should be in there, then when they are there, we will be able to see, and many people can like the websites you know, because if you keep hearing about something several times, you would want to see what is this thing that people are talking about, you would want to check it out to see if it is real, then if you find out that it is true, you will start using it."

In saying:

"I don't think people have enough information about the websites, so if maybe they could have information they will start using it"

Isaac (line15) also supports the argument that knowledge of the services might facilitate use.

Consistent with these findings, Wang and Chen (2012) found that improvement of residents' knowledge about e-government websites and services is one of the conditions that may facilitate the use of e-government services.

Core Concept: Trust

Trust is a concept that has been studied by several authors in the e-government field (e.g. Belanger & Carter, 2008; Chen et al., 2015; Teo et al., 2008). The study found some of the previously discovered trust variables: trust in government, trust in technology, and fear of identity and privacy losses. Most importantly, the study surfaced new theoretical trust concepts that were not explored in previous studies. The concepts are: reputation of the service, trust in the environment, and trust in the services itself. Andile (Line36) commented:

"I don't trust the website based on the stories that I have heard, not necessarily based on experience"

This implies that if the website had a good reputation, he would trust the service being provided and ultimately use the website. With regard to trust in the environment Maria (Line6) said:

"I don't really trust Joburg central, I still have that in my mind that someone is going to come and snatch my phone and run away with it while I am waiting there trying to access Wi-Fi and use the services".

Perhaps this concept emerged because crime is a problem in Johannesburg.

In saying:

And sometimes the links are outdated; I don't trust it and then when you try to communicate with the city of Johannesburg people through the website they don't respond".

Andile (Line67) is implying that sometimes information on the websites is outdated and not trustworthy.

Core Concept: Access

Access, a concept that emerged as significant in the present context was not present in Wang's (2014) framework. The possible reason is that Wang's (2014) study was conducted in China, where the majority of the residents own mobile devices and internet facilities are available in every village (Wang, 2014). According to Wang (2014), for 10 years, internet connectivity has not been a serious problem in China. However, in South Africa, access and connection to the internet remains a challenge. Even though the government has embarked on a free Wi-Fi project, Wi-Fi is currently available in limited places. Maria (Line5) said:

"I haven't explored that option because I am not usually in the vicinity where it is available".

Andile supports this claim by saying:

"If you look at studies, one of the main reasons why people in Africa don't use internet is because it is expensive and it is not available, not everyone has access to the internet on a regular basis. For some people, they only get it when they are at work, school or university. But if they are just there at home, they don't have access to the internet". (Andile, Line24)

Reflecting on Results

The preliminary results of this study confirm Wang's (2014) theoretical framework in that all the major concepts: value, user needs, effectiveness of government websites, and alternative information source were reflected. Even though all the core concepts have been confirmed at this stage of the data collection, not all the properties for each major concept emerged as significant. For instance, data did not suggest that user needs should be divided into three levels: expressed needs, objective needs, and conscious needs.

What is coming out of the data is that there is a need to extend Wang's (2014) framework. The study adds these core concepts: trust, access, and awareness to the framework to make it applicable in a Johannesburg context. The historical inequalities in education and access to resources in Johannesburg, as well as ongoing disparities in wealth clearly impact on access to the skills, technologies and services that are needed for digitally connected living and hence on the ability to access other e-services. In addition, Johannesburg's apartheid past, high crime levels, and dissatisfaction with service delivery in recent years, makes for high levels of mistrust in general, and of government services in particular. Where people are not routinely using digital tools and services, it may take a more concerted effort to create awareness of free services and to change people's behaviour to use them. These factors are clearly important in the context of South Africa and in other developing countries.

It is important to have a holistic framework that covers the heterogeneous population of a city. This will facilitate an understanding of why different people use or do not use Smart City services. By moving beyond just verifying the variables represented in existing theories, the study deepens the understanding of the use and non-use of e-government services and contributes to research in the e-government field. Future studies can apply the extended framework in different contexts.

The results of the study can help local governments ensure that e-government services are accessed and used by different people from different backgrounds. Awareness of Smart City

services was found to be a central concept that influences residents' use of these services. Local governments are advised to direct their attention to the different approaches that can be employed to raise awareness and improve residents' knowledge of these services. This will help create active residents and ensure that all residents have the privilege to access internet services and government e-services. Nevertheless, all the other concepts should also be addressed.

Conclusion

In the pursuit of Smart Cities, governments are developing e-government services to deliver e-services to the residents. E-government services have the potential to create greater equity in society by making services available to everyone at any place and time. However, e-government services also have the potential to create inequity since only people who have access to the internet can use the services. What is particularly important is that residents need to use the services in order to gain the benefits. The study employs Wang's (2014) framework to try and understand why residents use or do not use the provided e-government services. Data was collected through in-depth semi-structured interviews. At the time of writing the paper, nine interviews were concluded. The preliminary results reported in the study show that Wang's (2014) framework does hold in a Johannesburg context. In addition the results extend Wang's (2014) framework with new important core concepts: awareness, access, and trust. These concepts are particularly important to residents' participation in a developing country context and can be used to create a deeper understanding of how different types of residents engage or don't engage with Smart City services.

Acknowledgements

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