Provision of Governmental Services through Mobile Phones and Tablets and Threats to Users' Security and Privacy

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INTRODUCTION

The application of Information Technology (IT) dates back to the Second World War when, for example, the British used Colossus, the world's first electronic digital computer, for military purposes. It was also used a few years later when the US defence department established a network to bridge a connection between scientists and university professors in the early 1970s (Laudon & Laudon, 2012, p. 285). Since then public, private, and non-governmental organisations have continuously expanded applications and uses of IT and Information Systems (IS). The sign of these changes in public sector organisations can be traced back to the fourth quarter of the 20th century, when the concept of electronic government (e-gov) was introduced by researchers and public sector practitioners.

The e-gov movement has opened a new window for the public sector, promised better services for their stakeholders (e.g. citizens and businesses), and has improved organisational efficiency and effectiveness for service providers. As a result, the need to be present in physical places at a certain time has been replaced with more innovative ways of offering public sector services, which offer freedom of time (i.e. 24/7 days a week) and place (Gouscos, Mentzas, & Georgiadis, 2001) . The e-gov has ushered in considerable changes in terms of internal (operations of government) and external (services to public) objectives and services of an organisation. Various efforts have been made to fulfil the external objectives of the government through the use of different electronic devices. One example would be the establishment of local and central government websites, accessible through computer and the instalment of e-gov kiosks at different service points, to offer a variety of services to citizens. These few examples clearly indicate the willingness of governments to equip themselves with advanced technology for organizational efficiency and to provide more convenient and cost-effective services to the public.

However, in a continuously evolving world of IT and IS, it is an impossibility to use a particular technology for a long period of time since technological equipment are quickly outdated and replaced by more advanced and user- friendly devices. The possibility of doing transactions through mobile devices has led private organisations and local and national governmental organisations to further utilize mobile technology for providing their services.

However, regardless of the type of devices, personal computer (PC) or mobile phone, concerns over ensuring the security and privacy of technology users have been a critical issue to be tackled with since the inception of IT technology. This has been extensively explained and discussed by electronic business and e-gov scholars in the past decades. This article aims to focus on and describe in brief the recent threats to the security and privacy of mobile technology users, especially the users of mobile phones, tablets and laptops, and to highlight the citizens' mistrust and disengagement from online services due these threats.

BACKGROUND

The use of mobile devices as a channel to provide governmental services is known as mobile government (m-gov). These devices can be Personal Digital Assistants (PDAs), laptops, cellular phones, and tablet PCs. From the viewpoint of e-gov scholars, m-gov is not a unique subject since it has been called a supplement and an extension of e-gov by researchers such as Trimi & Sheng (2008) and Siau and Shen (2003). The mobility and wireless characteristics of mobile technologies have especially encouraged worldwide governments to run m-gov services. However, mobility and wireless characteristics cannot be considered as the only reasons to inspire public organisations. In fact, the daily enhancements and widespread use of mobile technology make mobile devices a more lucrative tool to offer service-based platforms.

The foundation for offering mobile-based services (i.e. mobile commerce) through a mobile technology channel was laid in 1979 (Kim, Chan, & Gupta, 2007), with the introduction of analogue mobile phone technology initially, and then through the gradual evolution from the second to (most recently) the fourth-generation mobile phones, on which the speed of data transformation for HSPA+ as one of the three types of 4G networks is expected to be between four to ten times higher than third generations (Varshney, 2012).

In addition, some companies such as Apple, Samsung and Nokia have introduced their own advanced handsets that operate based on different mobile operating systems like iOS, Android, Symbian and Windows Mobile. The advancement of mobile technologies and mobile operating systems like Windows Mobile has brought the opportunity of accessing web-based services even without the need for using a mobile Web version.

Moreover, from an anecdotal perspective, mobile phones which are used widely across the various subgroups of society can be considered as one of the best tools for overcoming the Internet connectivity problem (Ogunleye, 2010) and filling a digital-divide gap (Trimi & Sheng, 2008). However, some researchers still believe that this technology alone does not have the capacity to solve the problem of digital-divide and fundamental changes of society, along with exploitation

of IT, is required to achieve a comprehensive solution of digital-divide (Fuchs & Horak, 2008). In 2012, the International Telecommunication Union (ITU) reported that there were nearly six billion mobile-cellular subscriptions at the end of 2011 throughout the world. Also, the National Intelligence Council (2012) has highlighted that more than 70 percent of the world's population is already equipped with a type of mobile device, which supports the idea of its popularity and the possibility of offering services through a mobile technology channel.

Due to popularity and wide spread usage of mobile technology, hardware, software and telecommunication infrastructure have also been improved over time. Current mobile device technology (e.g. mobile phones) allows for installing a mobile-based application to use for commercial services or even for governmental purposes. Private and financial sector organisations have pioneered mobile-based applications (e.g. the British multinational grocery Tesco and NatWest bank are two examples of organisations that have established their own mobile-based applications), whereas public sector organisations have been content with informational mobile Web and Short Message Service (SMS) based services.

The real number of worldwide governments that have adapted to the functionality of mobile-based access to governmental services through the mobile handset is very limited. Only a few countries that have the required infrastructure have been able to introduce these applications. Ntaliani, Costopoulou, and Karetsos (2008) mentioned that several governments around the world have established their m-gov services and identified a limited number of developed countries (e.g. USA, Sweden, Denmark and Canada) that have already established their own mobile government portal. It is not very surprising to find that the high income countries followed by upper-to-middle income countries have exploited mobile-based channels to provide public services more than any other group of countries (see United Nations, 2012).

Nevertheless, the UN's finding has revealed new initiatives of worldwide governments establishing 25 websites especially designed to be used through mobile Web. Moreover, countries with SMS-based government services can be found easily around the world and due

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