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A M-Service Implementation in Large Government Organisation: A Case Study on an M-app in Australia

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Abstract

With the rapid proliferation of smartphones among citizens, government service providers have shifted their service-delivery focus through mobile services. However, its effective adoption and implementation are still uneven throughout various public sectors. The scarce research in the area prevented the generation of a sound knowledge base for m-service implementation, which has some distinct characteristics from the traditional e-services. This paper reports the investigation of a mobile application service in a large government organisation in Australia. Findings show that an m-service implementation does not follow a stage-wise model, where multiple actions and players involved at different levels makes it a complex and unique phenomenon. This study indicates that the cumulative knowledge and experience of various stakeholders within an organisation contribute to getting an innovation off the ground, wherein a conducive environment supported by appropriate policies and strategies, the readiness of customers and organisations, co-creation and the influence of management are important drivers.

Keywords m-government, holistic, cumulative knowledge, ICT capability, drivers.

1 INTRODUCTION

The world has witnessed a rapid growth in the adoption of mobile technology particularly in basic and smart mobile phones and personal digital assistance (PDA) over the past two decades. To reach out to the mass population, governments are increasingly moving toward establishing an "m-government" and using m-services as an extension of a web-based e-government. However, global m-government development remains uneven and evolving in some contexts (Hussain and Imran 2014; Lee et al. 2006; Mengistu et al. 2009).

It was revealed that most of the research works on m-government have been carried out in the last five to six years (Hussain and Imran 2014). However, those studies provide a partial view of its implementation process without a holistic perspective of the innovation phenomena. E-government research demonstrates that a technocentric view eliminates the social context because of lacking bi-directional association of technology and society (Heeks 2005). Thus, understanding national and organisational contexts is as critical as providing appropriate technological solutions, where enough effort should be devoted to the holistic understanding of m-government innovation and diffusion to minimise failure risks (Heeks 2005).

The majority of previous mobile technology studies reviewed either ignored the theoretical foundation or focused on the identification of "what" aspects through various quantitative approaches (Hussain and Imran 2014). These studies presented some insights but failed to provide a "holistic view" that considers mobile technology as an emergent, complex phenomenon particularly in the national and organisational contexts. The lack of consideration given to the dynamic implementation process was identified as the key reason for Information Systems (IS) failure (Lyytinen and Hirschheim 1988). Most innovation implementation frameworks proposed the simple unitary progression of developmental phases or stages over time, (Schroeder et al. 1989) common in m-government implementation frameworks (Alijerban and Saghafi 2010; Fasanghari and Samimi 2009). These studies lack the contextual explanation in which innovation encompasses with multiple, cumulative, and conjunctive progressions of activity sequences that unfold as innovation develops over time (Schroeder et al. 1989). Thus, the present study investigates an m-app service in a public sector organisation in Australia to understand the dynamic relationship of events and activities; the study uses multiple-theory by Baskerville and Pries-Heje (2001) to explain the holistic picture of m-app implementation. The research question investigated in this paper is, what are the major drivers of m-service implementation in the context a developed country's public sector like Australia. We used pseudonym "citizen app" to refer to the mobile application, and "Public Service Delivery" (PSD) to refer to the public sector organisation where the app was developed and this research was conducted.

This paper is structured as follows. The study provides literature review after the introduction with a snapshot of the framework used. Section three describes the case investigated and the method used for the study. The next section describes the findings and analyses followed by the discussion. The conclusion, limitation, and recommendation for future research direction are provided in the last section.

2 LITERATURE REVIEW

A systematic approach prescribed by Okoli & Schabram (2010, P.7) was followed to conduct the literature review with keyword 'mobile government' in the title in major databases like Scopus, ProQuest, IEE Conference Publications. Articles were finally selected reviewing the abstracts. It is found that various staged models to explain innovation development and implementation are provided in different literature. Among them, Eom et al. (2012) developed a six-stage model for building a mobile app for the government. While the stages highlight the evolution of m-services, they do not identify the complexities, setbacks, and surprises, as well as the knowledge-building and sharing involved in their development. Mohamedpour et al. (2009) developed the m-services acceptance framework and identified the constructs that affect user acceptance, although the mechanisms behind innovation development and diffusion were not described. Sandy and McMillan (2005) developed a five-stage model to guide an implementer in planning and applying m-government services. In describing the stages from the "initial" to the "fully interactive" levels, they identified six critical success factors including cost, business re-engineering, education, acceptance, security, and access to promote a successful m-government initiative. However, the model neither indicates the interconnection of factors in different stages nor the way ideas are proliferated in each stage of innovation development. Dreiling and Recker (2013) established a conceptual model of the innovation process framework based on their identified four distinct stages model, namely, ideation, incubation, implementation, and operation. However, this profit-driven model is not suitable for social benefit-oriented public service innovations.

Georgescu (2011) identified privacy and security as key factors associated with technological barriers in ensuring m-government success. He also identified financial barrier as start-up and transaction costs, customers' expectation and language barriers for m-government implementation. The study, however,, does not provide any implementation framework or method. Mengistu et al. (2009), in their non-framework based study, identified technological, legal, and citizen's economic and readiness issues, while Naqvi and Al-Shihi (2009) identified reliable technological factors including mobile infrastructure, 3G network, privacy and security, and absence of marketing campaign as m-government implementation challenges. The non-framework-based study by Thunibat et al. (2010) also reported various platforms and device limitations, as well as privacy, and trust as challenges for m-government implementation. In his non-framework based study, Kiki (2007) reported organisational, technical, governance, and social barriers to a successful m-government implementation. This study was accomplished over a small number of respondents from different continents, thereby lacking the understanding of a particular country context where these barriers may be profound. Trimi and Sheng (2008) identified e-government-based issues that similarly influence m-government and related issues. They indicated organisation interoperability and integration issues were prevalent at as the public sector, which is characterized more by its legacy-system than process-oriented system.

A number of survey studies looked at users acceptance of mobile e-government services from various perspectives that engaged theory of perceived behavior (TPB), technology acceptance model (TAM), unified theory of acceptance and use of technology (UTAUT) lenses (Abdelghaffar and Magdy 2012; Carter and Belanger 2005; Hung et al. 2012; Ohme 2014,). Vrechopoulos and Batikas (2009) also investigated the compatibility, image, relative advantage, and ease of use of diffusion of innovation (DOI) factors for diffusion and adoption of m-government services among Greek citizens and found that perceived compatibility and ease of use have significant predicting power.

However, m-government research lacks interpretative approach to elaborate the implementation in its complex environment. Stepwise linear stage models of innovation development process assume a unique one-way path for the discovery of new knowledge moves through various development stages. Rogers' (2003) innovation development process model starts with a need or problem recognition followed by basic and applied research; however, Kline (1985) suggests several sources as initiators without a single major source. Research is a process of producing knowledge but if existing knowledge can input in the central chain of innovation, then the research no longer necessary (Kline 1985). These processes develop shocks, surprises, and setbacks, and they require organisational restructuring (Schroeder et al. 1989) for the entire innovation development and diffusion. Thus, a thorough understanding of m-government services implementation can be explained through multiple-theory proposed by Baskerville and Pries-Heje (2001). The framework integrates the interactive, the linked-chain, and the emergent models.

The interactive model incorporates both technology-push and need-pull models. Furthermore, the model integrates push-pull wherein market needs drive technology, which then enables a market strategy relative to product or service development, price determination, marketing effort needed, and distribution where both push and pull are interdependent and developed concurrently (Lucas 1994). This model is regarded as a sequential process depicted in Figure 1 of Baskerville and Pries-Heje (2001; p. 4). The motive of innovators can be explained as the interaction of technology push through features in m-app and a need pull through citizens demand for easy and speedy real-time service delivery. The linked-chain model incorporates knowledge dimension in innovation development and diffusion. Knowledge is created through the interplaying links along the chain of central innovation, feedback, and research. This knowledge dimension is a major advancement over the interactive model as the organisational knowledge persists beyond any single innovation. The model clarifies the nature of innovation event. However, both models fail to explain the interaction of innovative activities with other events in the social setting, which are comprehensively accounted by the emergent model (Schroeder et al. 1989). The emergent model improves the disorganized progression of ideas revolving around innovation. This model describes organisational evolution in relation to innovation diffusion as the progress of innovation development that requires organisational restructuring. Schroeder et al. (1989) argued that the innovation process is a fluid, unstructured, emergent phenomenon that does not progress in discrete stages. Compared with other stage-wise innovation process models, the emergent model exhibited increased reliability (King 1992). Baskerville and Pries-Heje found these models tell complimentary stories about different aspects of the case in hand investigated (p. 201).

The above three models are linked with the initiative and progression of innovation or its development and organisational restructuration. However, these innovation events occur within a social system and not in isolation (Rogers 2003). People in a social system learn their behavioral patterns through formal social structures, as well as informal communication structures, norms, and values; these broad external

environmental factors affect their behaviors, which then impact successful innovation implementation. E-government researches also emphasize that its adoption depends more than technology, which includes organisational, and other contextual - human, economic, and social issues (Kumar et al. 2007). However, even after two decades of developing the e-government concept, principal e-government literature, an integrative approach to e-government development and implementation is still amiss (Zhao et al. 2012). Despite its rapid inclusion initiative by public administrators, m-government has not been studied to identify comprehensive general issues related to its successful implementation. The present study aims to present m-service implementation framework holistically. This study has two main objectives. First, identify initial forces building favourable environment to initiate m-service innovation. Second, identify major drivers supporting m-service implementation by analysing m-service evolution, development, and implementation. Figure 1 shows the initial conceptual framework representing m-government implementation.
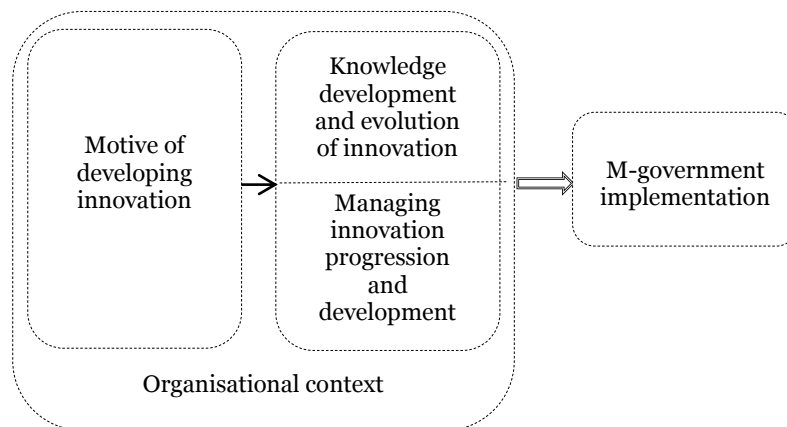

Figure 1: Initial conceptual framework of m-government innovation and diffusion [based on Baskerville and Pries-Heje (2001) framework)].

The outer circle of the figure represents the broader context of the country where m-services are implemented. Organisations, specifically public sectors, run their activities within this broad national context, which is in consistent with the technical standard, infrastructure, documentation, and human development of the country. The dotted lines in Figure 1 differentiate each aspect to express the fluidity without restricting the free flow of activities and events. With a knowledge base established within the country context and in consideration of the motive in the organisation context, innovation develops to accumulate knowledge through the central chain of innovation and to manage the progression of ideas, shocks, and setbacks (Kline 1985; Schroeder et al. 1989). A case study on "citizen app" in Australia is conducted to explain m-government implementation.

3   "CITIZEN APP" OVERVIEW

The strategic plan 2012-16 of PSD envisioned the provision of new and efficient means to access government services through mobile devices. The PSD delivers citizen services through different channels including telephony, face to face, online, and through mobile apps. The "citizen app" of PSD is a noteworthy award winning app developed in Australia. The Australia mobile cellular subscription (per 100 people) in 2014 was 131 (The World Bank 2014). "Citizen app" was initially a form of cohort idea where individual apps were developed for different age-cycle segments and cohorts. An app aimed at young people was the first released app in August 2012; young people were selected as the first cohort based they were assumed to have a quick uptake and to provide immediate feedback for improving the services. Other cohorts were developed in turns which raised the issue that cohorts are not sufficiently distinct that they overlap. For example, the young people cohort can be in the family cohort. Thus, mapping them was a challenge given that their issues were not separated for each cohort. The PSD constantly partnered with the i-phone operating system (iOS), who began developing through their platform first; and then, their android release followed. The PSD developed the apps using an agile methodology, in which the IT team was expected to deliver apps in a three-month time frame. Thus, the "citizen app" development journey was neither easy nor straightforward. Several issues relating to its development and delivery existed, along with time pressures, technical setbacks, high expectations of management, capability, reliability, legal issues, restructuration, and other relevant issues.

"Citizen app" still brings advantages for both citizens and organisations. The quick on-the-go characteristic provide great advantage with 24/7 accessibility to the citizens because of the portability of the mobile device. Image uploading facilities also expedited the document lodgement service. This is a cost effective approach in maintaining contacts instead of customers travelling or calling and having to wait. The app also empowers customers to take control of the information they provide to the PSD. From organisation's perspective, if PSD can ensure majority of customers doing business by themselves, their staff can focus on more vulnerable customers, as well as those with more complex requirements (STM). The app download hit over 3 million in 2014 (fact from an interview with IT staff). No cohort segment currently exists as those four cohorts were combined and in 2016 offered in one app called the "one cohort app.

4   METHODS

This single case study is part of a broader PhD study which explored multiple cases from both developed and developing countries. As one of the top ten leading countries in e-government development, Australia provided a good example of a developed country. The selection of case sites was careful and purposeful instead of choosing arbitrarily or selecting any organisation (Walsham, 2006; p. 322) to obtain rich information (Benbasat et al. 1987). The implementation process of different m-services was investigated within its actual context to provide in-depth insights. The case was selected based on accessibility and rationality. Being located in Canberra for the last three years, where the head-office of Australian public administration offices are situated, provided the researcher easier access to the organisation. For rationality, Australia "citizen app" was chosen as the case because it is one of the leading apps in Australian public sector. M-service was investigated as a whole as much as possible (Remenyi, 2012; Stroecker, 1991) and the holistic case study design contributed to the comprehensive understanding and explanation of the research problem at hand.

In the spectrum from "neutral" to "involved" observers (Walsham 2006), the researchers in this study were identified as "outside researchers" at the "neutral" end. One of the researchers conducted the study mainly through formal interviews. After site selection, the researcher, with the help of a supervisor, approached case organisations through e-mails and phone calls. After selecting case sites and gaining access approval, the researcher approached the university to conduct fieldwork and received ethical approval. In addition, a separate ethical clearance was required and obtained from the PSD to conduct enquiries on their "citizen app" service. The researcher conducted all interviews with PSD employees and users between November and December 2014. A gatekeeper (Remenyi 2012) was selected from PSD to introduce the researcher to the participants and to present an overall project idea. The researcher in this study collected the data mainly from interviews, which Walsham (1995; p.78) articulated as the primary data source of case studies from an outside observer. Furthermore, Remenyi (2012; p. 84) suggested interviews at different structural levels of the organisation and considering interviews as the central piece of information in case studies. Table 1 represents the list of interviewees.

Levels of Management	Particulars of Interviewee	No. of Interviewees
Senior Executive	(Referred as STM)	01
Executive Level	(Referred as TMa and TMb and so on)	07
Mid-Management Level	(Referred as MMa and MMb and so on)	07
Junior staff Level	(Referred as LLa and LLb and so on	01
Users		03

Table 1. List of Interviewees

The researcher approached a range of staff in the organisation to represent a broad spectrum of the population. Apart from the interview and organisational documents such as leaflets, brochures, and company reports, industry notices were collected to augment the field data. Each interview was audio recorded as permitted by interviewees and transcribed for later analysis. Interviews lasted around 45 minutes to 1 hour in average. A total of 19 interviews were conducted in the PSD office in Canberra. The assigned gatekeeper was present in almost all occasions. As an outside researcher, selecting the key informants to derive rich data was a challenge. Initial interviewees were asked to identify key persons involved in that particular "citizen app" implementation. The gatekeeper also assisted the researcher to identify the first few interviews with senior executives in the organisation. Those initial key informants were requested to refer any other eligible participant, and thus, snowball sampling technique was used to identify and approach potential respondents for the study.

5   FINDINGS AND ANALYSES

5.1   Country Context

It is nearly about three decades Australians started to use mobile phones. Since then, the continuous growth and evolution were found through introducing 1G network in 1987, 2G GSM in 1993, 3G in 2005 and 4G in 2011 (Read 2015). In 2015, mobile-cellular telephone subscriptions per 100 inhabitants were 132.80 in Australia (ITU Report, 2015). Citizens in varying life cycles embraced smartphone use and in its Strategic Plan 2012–2016, the PSD aims to use mobile devices to deliver cost-effective and efficient government services. The Australian context is characterized by modern IT equipment availability with educated users and staff. Relatively favourable capability and infrastructure in Australia influenced senior executives in PSD to explore and create the m-service delivery channel. In 2014, PSD found around 300,000 apps downloaded by individuals from the youth to senior citizens (TMe). Furthermore, senior executives acknowledge the pace of technology and its necessity of inclusion which is revealed by the statement of STM. STM stated in 2014 that, "the fact that you are planning to build an app in 2015 is too slow because it will be so different in 2015 and that's the pace of technology".

5.1.1   ICT policy, strategies, and formal documentation

The Australian government published numerous strategies and policies in its public service reports that ease funding and set the foundation for expecting an all-to-do app in a short time span; to name a few, they are, the Australian Public Service ICT strategy 2012–2015; Australian Government ICT Sustainability Plan 2010–2015; ICT Strategic Framework; Whole-of-Government ICT Policies and Circulars (on e-security details, ICT capability, infrastructure, procurement, interoperability, sustainability policies, guidance, and frameworks); and A Brief Guide to the ICT Security Controls Required by the Australian Privacy Principles. These continuously updated documents assisted ICT planners and implementers in line with the principles of Australia's progress, privacy, security, and other legislations. Operating under such a well-planned and static environment minimized many approval complications e.g., funding, business requirements, which may be necessary for the development of m-services under time pressure. In Australia information base for implementing ICT intervention develops a positive mindset in rendering citizen services through mobile technologies. A base is formed, and a boundary is set through ICT policies and requirements that place mobile interveners at ease for their initial app development, as evident from a top executive's comment *"the requirements are already set"* (TMa). In addition, the organisation needs to be ready to be able to develop m-service.

5.2   Organisational Readiness

Internal working arrangements in the Australian public sector has made considerable advancement with the application of modern technologies (APSC Archive, 2015). The PSD appeared to be one of the most well-equipped public sector organisations with computers available for each desk. Staffs are well connected through e-mails, teleconferences, and videoconferences. The PSD was ready to invent mobile solutions with this technical supporting and internal IT capability. Also, the organisations' ICT Strategy (2014-2017) specifies that the integration of mobile platform and technologies will play the role of strategic drivers for better and fast service delivery in Australia, this made funding easier.

5.2.1   Top management support and guidance

The senior executive had the view that an app will ease citizen service delivery in a cost-effective manner, where citizens will feel or understand the need for a mobile app. Citizens will embrace the service based on need. PSD was keen to use mobile intervention to adapt and to bring technological intervention when required. Senior executive support and guidance motivated the internal team to develop the citizen app. However, the developed country context pushed the boundary of senior executives' expectation to bring an app into the market within a very short time. TMa was quoted saying, "And he asked us to put a target team together with a view to create an app within. Well, I won't forget that was a tight time frame – something like six weeks" (TMa, 27/11/2014). Furthermore, the increasing expectation of covering all aspects of rendering services through apps was accomplished by forcing its continuous development while ignoring customer capacities to cope with change. TMb further stated that "some areas within the department assume you can do everything on the app; so you need to have some set principles on what are appropriate for the app."

5.2.2   Internal collaboration and flexibility

The collaborative culture in PSD accounted for better decision and output, as well as a loosely controlled flexibility and autonomy (Detert et al. 2000). The ICT department coordinated with the people involved

in business teams for business case development and requirement analysis, as well as negotiated with policy and program areas and meet legal requirements as stated, "So we'd gone with one of the simple, but we weren't going to push any boundaries from a legal perspective and from a business requirement perspective" (TMa). The people involved in the "citizen app" development cherished the autonomy to decide whom to involve in the innovation team from both internal and external sources (MMd, TMa).

5.3 Motive of Developing M-service

The motive to develop the app was neither technology push nor need pull alone. Numerous sources behind the invention requirements existed.

5.3.1 Cost efficient

Part of the overarching decision in PSD was to provide a cost-effective service channel (TMTb). The young people was initially considered and services to be delivered to achieve maximum value with minimal cost of enhancing awareness, their understanding, and use. The service is given for free which is minimizing both organisation and users' cost. Using the app users can minimize time cost, transport cost, social cost. Similarly, organisation can minimize client-server interaction frequency and time minimizing cost.

5.3.2 Time efficient

Another factor is to bring time efficiency to deliver m-service to citizens minimizing service delivery time. With the help of "citizen app" customers receives services in real time very quickly (MMc, MMd). Service delivery staffs in PSD can allocate their saved time to focus more on customers' complicated problems.

5.3.3 Customer readiness

In 2014, in Australia, 74.4% mobile phone users used smartphones (Statista, 2016). Users were ready as they have been preconditioned by the other things they do on their phones. ACMA research shows that 68% of Australians with an Internet-enabled mobile phone downloaded a mobile application in the six months to May 2013. Users today want to be able to do things on the go. PSD found that numerous downloads of their "citizen app" were made by seniors and young people (TMe).

5.4 M-service Evolution

M-service development started internally at PSD's ICT department (TMd). The innovation team leader used his experience to form a team. To do so, instead of restricting "citizen app" development capability to a single few, the PSD attempted to build capability with the "campus" approach in mind to expand capabilities internally (TMb). In designing and developing m-service, the following supporting factors were critical.

5.4.1 Customer-centric mental state in the design, testing, and production stages

PSD staff consider citizens as "customers" and public service organisations as "business organisation." Hence, customer centric mental states were present at the innovation design, and development stages. Senior executives have the mindset that customers can provide the best clue in developing a user-friendly app (STM), which leads to communicating and coordinating with customers, as well as obtaining their feedback as input to improve the user interface design. The decision to include customers in the design and subsequent stages does not guarantee that customer inputs are all addressed and taken care of. A customer-centric mental state in Australia embeds input from users, but a viable balance between customers' expectations and the organisation's ability to deliver and sustain innovation.

5.4.2 Co-creation

Co-creation allows customers and organisation to create value through interaction (Galvagno and Dalli, 2014). In PSD during the design and trial phases of app development, young users were called upon to assist development of better user interface design so that the app could be easily operated and necessary features can be added. PSD place emphasis on customer user testing at their design stage rather than at a later stage. Users tell their requirements and the internal IT team map those requirements up for user interface through a third party tool like app-in. So rather than coding straight away which takes up time, this third party app gives customers a sense of how that works and then IT team build as per suggestion back their design (TMb).

5.4.3   Knowledge and not research

Past experiences and existing IT knowledge assisted the internal team to design the app analyzing business necessities and mapping policy requirements and legal boundaries. With their customer-centric mental states, the internal IT team collaborated to develop the app. Their existing knowledge in addition to mental state developed in early stages of work passed through the invention, design, trial, and production stages. Research was not the primary input for innovation development; the objective comprised of the past and new knowledge attained through the interaction of partners as the primary source (STM). Searching for additional knowledge through research was unnecessary. However, the research conducted earlier for other than the specific purpose at hand served as the foundation underlying this entire innovation structure.

5.5   Managing Innovation Progression, Development, and Diffusion

Innovators emphasize innovation evolution and manage progress of idea development including their complex interactions and diffusion. These processes call for organisation restructuring and effective communication and promotion mechanisms.

5.5.1   Organisation restructure

It was determined that app innovation would be a priority in PSD. Once the internal ICT team was formed to design and develop the app, a need for analyzing business requirements, mapping policy, and considering legal issues arose. Thus, the organisation needed to support this work by moving people and creating new positions.

5.5.1.1 Experienced move for collaboration and robust product development

A number of changes were made to the structure to allow for m-service development. Experienced people working for around 10 years and above were transferred to different positions in relation to the app. An APS6 (MMa) working for 14 years with PSD was recruited to the business project team within a year of app development to ensure that the app was operating in accordance with the policy. Following the restructuring, business rules relating to the app were documented and discussed with project officers (LLa) and with stakeholders. Experienced people were brought in within a year of app development to observe the progress of different digital projects around the organisation. Those projects were brought together to create a more cohesive programme or strategic view to avoid the chances of simply focusing on that particular project with no idea of what is happening to the rest of the organisation. The restructuring helped in tapping the resources to develop a robust product at the end (MMd).

5.5.2   Communication mechanism and promotion

Effort was provided to promote uptake of the app through a communication mechanism, as well as different promotion and training approaches. Sstaff at service and call centres were given training on overall digital services including training on use of the app. Training was given within a group of maximum of 20, with an average of 12–15 key staff (TMc). A communication mechanism was developed in the department to promote the app and to support staff to communicate better to the app users (MMb). Various methods were used to promote use of the app to the public including Media releases and appearances on radio talk shows. Executives also attended different forums where they talked about the app. Staff at service centres demonstrated how to download the app, how to register, and how to use it (MMc). Word of mouth amongst citzens using the app played a significant role in communicating about the app and how it could be used.

6   DISCUSSION

The findings show that a country's clear policy and strategy for modernization of service delivery and modern technology created a strong basis for m-service development. Modern technology and availability of appropriate policy helped to increase users' trust and confidence on government (Scott et al. 2016). It was found that there were well established institutional arrangement which facilitated m-service development and diffusion. Top management support and guidance is an important aspect of organisational readiness and leads to higher IT adoption (Lauren and Igbaria 2001). Top management support is required for encouraging and creating confidence among innovators (Migdadi et al. 2015). This research finds that top management support allowing funding, deciding on who to target first to deliver, defining role of IT people and policy engagement people to balance techno-advance output and organizational required input and deciding on other necessary restructuringy (TMf, STM, MMa, TMb). Internal collaboration refers to conditions of close cooperation between separate functional

departments of the company and their respective employees (Yang et al. 2003). In PSD, collaboration between people of IT team and other business was necessary to mapping balance of policy, requirement and developed innovation.

The case study found both technology-linking and need-linking to realize successful innovation diffusion. With wider use of mobile technology, customers expected speedy service in real time. The then PSD IT team was working with online services and investigating JQuery mobile to implement web app. This knowledge was then linked to deliver service in real time through "citizen app". However, besides only technology push or need pull our research found that several sources acted as initiators. A mixture of readiness of customers and organisations, the internal ICT team's capability, the involvement, influence and support of the Senior Executive created a positive mindset among inventors (Kline 1985).

In a developed country like Australia, customer-centric attention leads inventors to develop their "mental state" that focused more on mobile-driven customer service delivery. In PSD, the reality was that inventors attempted to identify customer needs for the app; developed and improved it iteratively through co-creation' of inventors and customers to fulfill the app requirements; and delivered satisfaction to customers by introducing the final version of app through an integrated marketing program. Hence "co-creation" was found an important driver for m-service development. Prahalad and Ramaswamy (2004) argued that "co-creation is about joint creation of value by the company and the customer". In PSD, customers input went more than listening; there were deep engagement, live interactivity and willingness by both inventors and customers to act upon app development (TMb). Knowledge acts as another important driver to develop m-service. The developers did not turn to research first; instead, they communicated and interacted with others to collect and accumulate knowledge. The team shared their existing knowledge through interaction, which created a totality of cumulated human knowledge (Kline 1985). This accumulated human knowledge was sufficient to develop innovation; no research was needed (Kline 1985).

Restructuring in terms of people relocation was highly apparent in PSD for m-service innovation. Restructuring was not internal physical restructuring because PSD already had the infrastructure for its online service delivery through IT. But for m-service, experienced people working in the same environmental context for at least 10 years were transferred into an app related department within a year of innovation design and development. The pattern of internal communication changed with change in the network of working relationship. A strong communication mechanism and an integrated marketing program are required to diffuse the developed app. The design phase requires partners to analyze and to communicate business requirements, to abide by policy requirements, and to meet legal boundaries accentuating privacy and security issues. An integrated marketing program was observed through advertising particularly word of mouth, public relations in terms of media release talk show, and other posters and leaflets.

7 CONCLUSION, LIMITATION AND RECOMMENDATION

One of the key findings of the research indicates that m-service implementation is a complex phenomenon which engages multiple players at different levels. Cumulative knowledge and experience of stakeholders within an organisation play a crucial role in ensuring the successful implementation of m-service innovation. At the same time, a conducive environment augmented by suitable policies, strategies, readiness of customers and organisations, co-creation as well as the influence of management, act as key drivers. The study includes only m-app implementation; applicability of the model needs to be tested in other types of mobile service delivery channel, for example, SMS, service notification by voice push. The findings of this case study can be further strengthened through the utilization of multiple case studies. Future research is recommended for m-government services implementation in the developing country context, underpinning the same framework. Findings are expected to contribute towards further understanding of enablers and drivers of innovation in the m-service space.

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