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COLLECTeR

Iberoamérica

Collaborative
Electronic Commerce
Technology and Research
Conference

6 / 9 November

2007

Córdoba / Argentina

 Universidad Nacional de Córdoba

[Version Española](#)
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[What is COLLECTeR?](#)
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Final Words and Gratefulness

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We know that the "digital opportunity" for the development of the economy and the society, could be a generating source of conflicts and social fragmentations. It is in this scope where the connection of different sectors becomes indispensable. The challenge of events such as COLLECTeR resides in contributing to the amplification of the capacity to perceive the reality in order to enrich the potential significance of the information in order that it will improve the quality and quantity of our ideas, thoughts and actions.

With this aspiration and stimulating feeling of a mission accomplished, we would like to extend our gratitude to:

The Rectora and Vice Rector the Universidad Nacional de Córdoba, for their support in the realization of COLLECTeR Iberoamérica 2007;

Fundación Mediterránea, for their belief in the social importance of the activities of this event and in its importance and efficacious influence to the local business sector;

The invited keynote speakers, many thanks for generously acceding to present their experiences and investigations in distinct areas of electronic commerce: Alberto Cerda (Chile), Rogério do Nascimento (Brazil), Felix Hampe (Germany) and Raúl Saroka (Argentina);

The sponsors

The participants - with whom we are especially grateful - for their response to this convening, sending their works from more than 15 countries. In total, we received 54 works originating from: Australia, Brazil, Chile, Greece, Holland, Italy, Japan, Kuwait, Lithuania, Mexico, Peru, Portugal, Spain, the United States, Uruguay, Venezuela, and of course, Argentina, where we received the most responses.

The evaluators, with whom we want to take this opportunity to also express our enormous appreciation for taking on the rigorous task to generously and without self-interest correct the works selected. Of the 54 received, 37 were selected to be presented to the 7 tracks. Each track dealt with the following subjects:

1. Models of electronic businesses and their implementations
2. E-education
3. E-government
4. Applications
5. Legal Aspects
6. Intellectual Capital and Knowledge Management
7. Mobile Commerce

Last, but not least, all the assistants have accompanied us and who have actively participated in the discussions and comments that were generated in womb of each committee and all throughout this fruitful encounter.

Editors {

- Carola Jones
- Norma Juanes
- Paula Nahiriak
- Daniel Britos
- Cecilia Diaz
- Ricardo Castello
- Daniel Bollo

What is COLLECTeR ?

COLLECTeR (Collaborative Electronic Commerce Technology and Research) is a joint venture undertaken by universities around the world which, through a loose federation of research centres -one located at each institution- provides both depth and breadth of expertise in Electronic Commerce.

It was originally established by nine universities in Australia, New Zealand and South Africa, and since its inception, it has grown to over twenty institutions, now including research centres in England, Slovenia, the United States, Canada, Chile, Spain and Argentina (see also www.collecter.org , www.collecter-latam.org)

COLLECTeR Iberoamérica 2007 is the fifth congress made in Iberoamérica. This time the congress will take place in Córdoba, Argentina, from the 6 to the 9 of november .

If the site is browsed , useful information about the Universidad Nacional de Córdoba, the city, and the province of Córdoba will be found.

More information: info@collector.org.ar

The 6th COLLECTeR Iberoamérica will be organized by the Universidad Politécnica de Madrid in 2008 (see www.collector.euitt.upm.es).



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Universidad Nacional de Córdoba

COLLECTeR

Programa de COLLECTeR Iberoamérica 2007.Martes 6 - Miércoles 7 - Jueves 8 - Viernes 9

Los trabajos seleccionados fueron publicados en actas bajo el I.S.B.N 978-950-33-0625-3. Aquellos autores que deseen que se publique su paper en el sitio web del congreso, sólo deben indicarlo a info@collecter.org.ar

The works selected were published in the proceedings under the I.S.B.N. the 978-950-33-0625-3. Those authors who agree on publish their papers at the web site, just let us know to info@collecter.org.ar

Martes 6 de Noviembre

Lugar: Universidad Nacional de Córdoba, Facultad de Derecho y Ciencias Sociales, Salón Vélez Sarsfield (Obispo Trejo 242)

.....
9:00 Acreditaciones

10:15 Apertura del Congreso: Palabras de Pedro Yanzi Ferreira, Decano Carolina Scotti, Rectora de la UNC; Carola Jones y Narciso Cerpa, grupo COLLECTeR, Sergio Roggio, Fundación Mediterránea.

11:00 Plenario: "Nuevas Tecnologías y Copyright: Restricción/Acceso" - A.Cerda Silva. Universidad de Chile. (Chile)

12:00 Visita guiada Manzana Jesuítica, Patrimonio de la Humanidad.

14:30 Negocios: Modelos de E-negocios y su implementación

* Aligning the Business Solution with the Technological Solution in the Development of B2B Collaborations - Pablo D. Villarreal, Jorge Roa, Omar Chiotti, Enrique Salomone. Universidad Nacional Tecnológica-Santa Fe- INGARCONICET. (Argentina)

* A Framework to Guide SMEs through the Development of an eBusiness Implementation Strategy - Marisa Sánchez, Laura Reeb. Universidad Nacional del Sur. (Argentina)

* Towards Semantic Interoperability in Collaborative e-Commerce through Contexts and Ontologies - María Laura Calusco. CIDISI-UTN-FRSFINGARCONICET. (Argentina)

16:00 Break

16:15 E-educación

* Blended Learning Adaptation for High Education Knowledge Management - María Silvia Cadile, Nelia T. Vermouth. Universidad Nacional de Córdoba. (Argentina)

* Un Portal universitario y su evaluación con la aplicación de una técnica de web mining, el clic stream analysis - Cecilia Díaz - Eduardo Gauna. Universidad Nacional de Córdoba. (Argentina)

* Modeling Virtual Communities of Practice for e-Education - María Clara Casalini, Elsa Estevez. Universidad Nacional del Sur. (Argentina)

17:45 Break

18:00 Plenario: Presentación del Journal of Theoretical and Applied Electronic Commerce Research - Narciso Cerpa, Director.

20:00 Brindis de bienvenida.

Miércoles 7 de Noviembre

Lugar: Hotel Sheraton Córdoba (Duarte Quirós 1300)

Martes 6 - Jueves 8 - Viernes 9**Sala A**

9:30 Plenario: "Informaticidad, convergencia digital y las nuevas aplicaciones de e/m-commerce" - Rogério P. C. do Nascimento. Universidade Federal de Sergipe. (Brasil)

10:30 Break

10:45

Sala A**E-educación: Experiencias en el ámbito educativo**

* Una experiencia de Aprendizaje Cooperativo en el primer curso de Ingeniería técnica de telecomunicación - María Luisa Martín Ruiz, Argüelles Irina, Portillo Eloy, Gago Esther. (España)

* Access to resources of the Virtual Academic System by means of the implementation of movable tools - Cristian Villalta Lagos. Universidad Inca Garcilaso de la Vega. (Perú)

* Robot Scrobot for training by e-learning - Juan Carlos Parra Márquez, Karina Pilar Cid Cifuentes. Universidad del Bío-Bío, Depto. de Sistemas de Información/Tata Consultancy Services. (Chile)

12:30 ACTO CENTRAL: Almuerzo de trabajo.

COLLECTeR Iberoamérica 2007 - Sergio Roggio, Presidente de Fundación Mediterránea; Gerardo Fidelio, Vicerrector UNC y Narciso Cerpa, Director COLLECTeR Iberoamérica (Chile).

"Comercio Electrónico en Argentina. Capacidades y Desafíos en la Construcción de la Sociedad de la Información" - Trabajo conjunto UNC- IERAL

- Aplicaciones del Comercio Electrónico - Rogério P. C. do Nascimento, Universidade Federal de Sergipe (Brasil).

Experiencias punto com - Pablo Ortega, lavoz.com.ar (La Voz del Interior) y Gabriel Chersich, cadena3.com (Cadena 3).

Agradecemos la asistencia de las siguientes empresas : AGUAS CORDOBESAS, ARCOR SAIC, ARTECHE, BANCO DE LA PROVINCIA DE CBA, BANCO HIPOTECARIO S.A., BICE S.A., CLIBA SA, CORDOBA DIESEL S.R.L., DIAC SRL, EMERGENCIAS MEDICA INTEGRAL S.A., ESTUDIO DEL POPOLO , FIAT AUTO ARGENTINA S.A., GEORGALOS HNOS., J Y S CONTIGIANI Y CIA. SC, MAXJEVA , MEGATLON SRL, MOTOROLA ARGENTINA SA, MUÑOZ, MUÑOZ, ORBE, MACROPRINT, PARUSSA S.A., PEUSSO, PIN SA, RIOS DEL BARCO, ROGGIO SA, SANCOR COOP. DE SEGUROS LTDA., SANCOR COOP. DE SEGUROS LTDA., SANCOR COOP. DE SEGUROS LTDA., TÜV RHEINLAND, VAIRA IMPRESIONES, VIDPIA SAICF, NEYRA, INTEL, JA, LA VOZ DEL INTERIOR LA VOZ DEL INTERIOR, CADENA 3, IUA, AIT

Sala A

15:30 Plenario: "**Situación del Comercio Electrónico en la República Argentina**" - R.Saroka, Universidad de Buenos Aires. (Argentina)

16:30 Break

16:45 E-gobierno

* From E-Government to Seamless Government - Elsa Estevez, Pablo Fillottrani. Universidad Nacional del Sur, Center for Electronic Governance United Nations University - International Institute for Software Technology Macao S.A.R., China. (Argentina)

* Transparencia a través del Concejo en Línea: La experiencia de Peñalolén, Chile - Carlos Bravo, Samuel Varas. Universidad Adolfo Ibáñez. (Chile)

* eGovernment Topics Applied to Municipality Web Sites - Alfredo Vazquez, Daniel Alberto Giulianelli, Rocio Andrea Rodríguez, Artemisa Trigueros, Pablo Vera, Nora Cristina Gigante, Isabel Marko, Monica Larrosa. (Argentina)

18:00 Reunión de trabajo grupo COLLECTeR.

Jueves 8 de Noviembre

Lugar: Hotel Sheraton Córdoba (Duarte Quirós 1300)

Martes 6 - Miércoles 7- Viernes 9

9:30 : Plenario

"**Mobile Value Added Services: Facing the Gap between Lab Research and Market Entry**"- J. Felix Hampe. University of Koblenz-Landau. (Alemania)

10:30 Break

10:45

SALA A: Aplicaciones I

* PARTICIPA: A citizen participation platform based on Web services - Emilia Pérez Belleboni, Sergio Sánchez García, Ana Gómez Oliva, Alfonso Muñoz Muñoz. Universidad Politécnica de Madrid. (España)

* Systems thinking and knowledge sharing - Ian Douglas. Florida State University. (USA)

SALA B: E-legal

* Justice and law in/for the Information Society - M. Graciela de Ortúzar, Noemí Olivera, Araceli Proto. Universidad Nacional de La Plata, Comisión de Investigaciones Científicas de la Provincia de Buenos Aires. (Argentina)

* Data Protection Law under the Framework of Electronic Commerce: Responsibility Principles - Gladys Rodríguez. Universidad del Zulia. (Venezuela)

* ¿Qué queda de los derechos en la red? Especial atención al caso del spam. Una perspectiva internacional - Celia Fernandez Aller. Universidad Politécnica de Madrid. (España)

12:30 Almuerzo

14:00

SALA A: Aplicaciones II

* A behavior based IDS model to secure telecare services in smart homes - Ivan Pau, Miguel Ángel Valero. Universidad Politécnica de Madrid. (España)

* Arquitecturas Orientadas a Servicios en Redes de Nueva Generación - José-M Andrinal, José-F Martínez, Ana-B García. Universidad Politécnica de Madrid. (España)

SALA B: Capital intelectual y administración del conocimiento

* Knowledge Management as Part of the e-business Process to Leverage Growth in Middle-Size Companies – Daniel Piorum. Universidad de Buenos Aires. (Argentina)

* Web 2.0, de la información al conocimiento - Martín Parselis, Universidad Católica Argentina. (Argentina)

15:00 Break

15:15

SALA A: Comercio móvil

* Designing mobile remittance services - Harry Bouwman, Jean Carlos Sandy. Delft University of Technology. (Holanda)

* Challenges in designing viable business models for context-aware mobile services - Timber Haaker, Bjorn Kijl, Luca Galli, Ulla Killström, Olli Immonen, Mark De Reuver. Telematica Instituut, University of Twente, NEOS, Elisa Corporation, Nokia, Delft University of Technology. (Holanda)

* Mobile User Needs: Quality of Service - Tarek El-Kiki, Elaine Lawrence. University of Technology Sydney. (Australia)

17:00 Conclusiones y lineamientos para el trabajo futuro.

18:00 Cierre

Viernes 9 de Noviembre*

Día dedicado a la consolidación de redes de trabajo, formación de grupos e intercambio académico.

Martes 6 - Miércoles 7- Jueves 8

9:00 Salida desde el Hotel Sheraton.

Visita al camino de las estancias jesuíticas y almuerzo criollo.

18:00 Regreso al Hotel Sheraton.

NOTA: (*) Día incluido en la tarifa Full.

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Índice de Trabajos

Negocios

1	<i>Gestión del Conocimiento, como un proceso de e-business, para apuntalar el crecimiento de empresas medianas - (análisis de un caso)</i> Daniel Piorun	3
2	<i>Estudo de Soluções Internet do tipo e-vortal para o sector da Panificação: a situação em Portugal</i> Jorge Gouveia, Paula Oliveira, João Varajão	15
3	<i>A Framework to Guide SMEs through the Development of an eBusiness Implementation Strategy</i> Cristina A. Sánchez, Laura Reeb	23
4	<i>Towards Semantic Interoperability in Collaborative e-Commerce through Contexts and Ontologies</i> Néla Rico, Ma. Laura Taverna, Ma. Laura Caliusco, Omar Chiotti and Ma. Rosa Gall	37
5	<i>Fatores de entrada para o Comércio Electrónico em Organizações Portuguesas</i> Ramiro Gonçalves, João Varajão, João Barroso and José Bulas Cruz.....	47
6	<i>Maturidade do Comércio Electrónico/Negócio Electrónico</i> Elisabete Moraes, Ramiro Gonçalves e José Pires	55
7	<i>Aligning the Business Solution with the Technological Solution in the Development of B2B Collaborations</i> Pablo D. Villarreal, Jorge Roa, Omar Chiotti and Enrique Salomone	63
8	<i>Propuesta de un Modelo de Negocios basados en el Capital Intelectual</i> Augusto Bernuy Alva and Luís Joyanes Aguilar	73
9	<i>Tourism Promotion in Rural Areas: Tools for Quality Design</i> Francisco Cipolla-Ficarra.....	83

Educación

10	<i>Robot Scorbob for training by e-learning</i> Juan Carlos Parra Márquez and Karina Pilar Cid Cifuentes	95
11	<i>Una experiencia de Aprendizaje Cooperativo en el primer curso de Ingeniería de Telecomunicación</i> María L. Martín-Rufz, Irina Argüelles, Eloy Portillo y Esther Gago.....	105
12	<i>Modeling a Repository of Knowledge for Virtual Communities of Practice Supporting e-Education</i> María Clara Casalini and Elsa Estevez	117
13	<i>A Framework for Knowledge Sharing Technology</i> Ian Douglas	129
14	<i>Adaptación de Blended Learning para la Gestión del Conocimiento en Educación Universitaria</i> María Silvia Cadile y Nelía T. Vermouth.....	139
15	<i>Web 2.0: de la información al conocimiento</i> Martín Parselis	145
16	<i>Access to resources of the Virtual Academic System by means of the implementation of movable tools</i> Cristian Villalta Lagos	163
17	<i>Evaluación de usabilidad Para aplicaciones e-learning</i> Leda Beatriz Diglón	175
18	<i>Un Portal universitario y su evaluación con la aplicación de una técnica de web mining, el clic stream analysis</i> Cecilia Díaz y Eduardo Gauna	187

Aplicaciones & Tecnologías

19. *Arquitecturas Orientadas a Servicios en Redes de Nueva Generación*
José-M Andrinal, José-F Martínez, Ana-B García 199
20. *A behavior based IDS model to secure telecare services in smart homes*
Iván Pau, Miguel Ángel Valero, Javier Palacios, Esther Gago, Justo Cariacedo 213
21. *PARTICIPA: A citizen participation platform based on Web services orchestration strategies*
Sergio Sánchez García, Ana Gómez Oliva, Emilia Pérez Belleboni, Alfonso Muñoz Muñoz 223
22. *Protótipo de Serviço de Busca para a Web baseado em Contextos, Sintagmas e Correlações*
Fábio Augusto Procópio de Paiva and Cláudio Rodrigues Muniz da Silva 235

e-gobierno

23. *e-government Topics Applied to Municipality Web Sites*
Daniel Alberto Giulianelli, Rocío Andrea Rodríguez, Pablo Martín Vera, Artemisa Trigueros,
Isabel Beatriz Marko and Mónica Irene Larrosa 247
24. *Transparency through Online Local Government Council: The experience of Peñalolén, Chile*
Samuel Varas and Carlos Bravo 261
25. *From e-government to Seamless Government*
Elsa Estevez, Pablo Fillottrani and Tomasz Janowski 269

e-legal & social

26. *Derecho de protección de los datos en el marco del comercio electrónico: principios de responsabilidad.*
Gladys S. Rodríguez 283
27. *Justice and Law in / for the Information Society*
M. Graciela de Ortúzar , Noemí Olivera and Araceli Proto 297
28. *¿Qué queda de los derechos fundamentales en internet? Una perspectiva internacional.*
Celia Fernandez Aller 305

e-movil

29. *Challenges in Designing Viable Business Models for Context-aware Mobile Services*
Timber Haaker, Harry Bouwman, Bjorn Kijl, Luca Galli, Ulla Killström, Olli Immonen and
Mark de Reuver 317
30. *Mobile Banking Adoption: Risk and relative advantage vis-avis PC-accessed Internet Banking.*
Hernan E. Riquelme, Rosa E. Rios 331
31. *Designing Mobile Remittance Services in Developing Countries*
Harry Bouwman and Jean-Carlo Sandy 339
32. *Mobile User Needs: Quality of Service*
Tarek El-Kiki and Elaine Lawrence 347

Mobile User Needs: Quality of Service

Tarek El-Kiki and Elaine Lawrence

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Abstract

Success or failure of any mGovernment mobile service project is decided by the effectiveness of the service itself. This paper is one of a four-paper series handling mobile user needs in a current research project that endeavours to measure the effectiveness of mGovernment services. In order to achieve as precise a measurement as possible, mobile services are analysed from the perspective of the mGovernment users to their root components. Mobile-user-centric government makes satisfying citizen and business needs the centrepiece in its planning so as to create communities of networked users, not just portals, for individual users. Hence, this paper analyses part of a real-world opinion survey, extracting facts that are used as metrics to measure the effectiveness of existing or proposed mServices.

Key words: mGovernment, mService, End User

1 Introduction

Electronic Government (eGovernment) involves the automation or computerization of existing paper-based procedures that is prompting new styles of leadership, new ways of debating and deciding strategies, new methods of transacting business, new techniques for listening to citizens and communities, and new strategies for organizing and delivering information [1]. Mobile Government (mGovernment) may be viewed as a subset of eGovernment. It stands for the use of mobile and wireless communication technology within the government administration and in its delivery of services and information to citizens and firms [2]. On the other hand, mGovernment should not be viewed as a new type of government, rather a new 'tool' for government. Mobile communications and Internet technologies are enabling access to new eGovernment services at anytime and from anywhere. In order to decide the success and failure factors of any mGovernment service project, service engineering has to cope with the requirements of the individuals, and sometimes the conflicting interests of particular roles of involved government officials [3]. Accordingly, based on the effectiveness evaluation study by the authors [4], this paper elaborates on the "value for money" as one of four dimensions controlling mobile users' satisfaction.

This paper, therefore, reports on the mobile end user quantitative and qualitative data collected from a web based anonymous survey. Although this survey is still current, the collected data were ample to be examined and analysed (n=147). Section 2 provides the background to the mobile-users' needs and benefits, and Section 3 contains the methodology and the theoretical underpinning of the research. Demographic data are found in Section 4. The survey results are discussed in Section 5, and the conclusion and details of further research are found in Section 6.

2 Background on mobile- user's needs and benefits

User's satisfaction and usage have been examined by many researchers in the Information Technology (IT), Information Systems (IS) and Networking fields and may be defined as the extent to which users believe that the available service meets their needs. Davis [5] defines perceived usefulness of a service as "the degree to which a person believes that using a particular system would enhance his or her job performance". One year later research by Conrath & Mignen [6] suggested that the impact of user expectations should be considered when assessing user satisfaction. Further attempts were made to capture the overall post hoc evaluation that mobile users had regarding the use of an IS system coupled with antecedent factors that form this satisfaction [7-9].

More recent research [10] defined nine generic customer service dimensions in a model to be used to assess all types of internal and external customer services and their satisfaction. These dimensions are Access, Choice, Courtesy, Knowledge, Quality, Recovery, Reliability, Tangibles and Timeliness. Two years later, Centeno et al. [11] identified three trends in public needs for eGovernment services, namely needs related to: service provision, service delivery, and service access; where each trend had its related needs. The authors [12] classified those needs according to the originating back and front offices. These authors also developed the "Mobile-User Satisfaction and Usage Analysis Model of mGovernment Services" which is the practical implementation of the theoretical MPE2M-mG (Multi-Perspective Effectiveness Evaluation Methodology for mGovernment) methodology [4]. It represents a methodology to translate mobile-user's goals into metrics which are the core elements sought and used when (re)engineering a mobile service.

It is worth noting that some of mobile-user's benefits are also referred to by some eGovernment researchers as 'opportunities'. For example, Ndou [13] considers reducing the bureaucracy, offering round the clock accessibility and fast and convenient transactions as opportunities for eGovernment to enhance the quality of services in terms of time, content and accessibility. On the other hand, despite the fact that end users' goals or benefits are seamlessly interrelated and cannot be significantly separated from each other, the mobile-user satisfaction and usage analysis model is used to classify them into four groups: Value for Money, Quality of Service, Efficient Transactions, and Strategic Data as per Figure 1. The focus of this paper is on the first group; Value for Money, as perceived by mobile end users who participated in a real-world online survey studying those users' needs and goals for a government service rendered via mobile technologies (mService).

In this research, mobile users are citizens and businesses using the mService and includes core, regular or sporadic users only. It concentrates on the users of the mService rather than its maintainers or administrators at the back office as explained in an earlier paper by the authors [14]

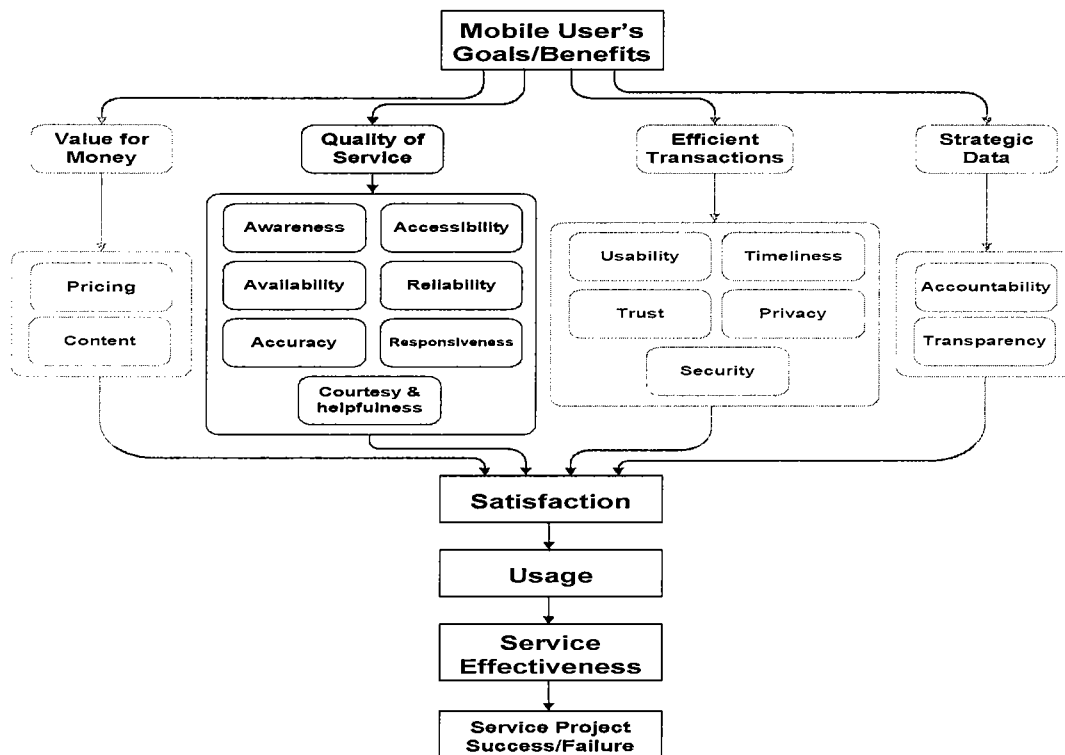


Figure 1: Mobile-user's Benefits from mGovernment Services, source: [14]

MPE²M-mG collates the concepts of Goal/Question/Metrics or GQM [15] and the Balanced Scorecard Approach or BSA [16]. Table 1 reflects the GQM conceptual level represented in goals as viewed from citizens and businesses perspectives as consumers of mService, where active users are those who are aware of and used one of those mServices, and passive users are those who may not be aware of or used any mService.

GQM BSA	Conceptual Level	Operational Level	Qualitative & Quantitative Level	
Perspective	Goals	Indicator Domains	Active Mobile Users Statements	Passive Mobile Users Statements
Citizens / Businesses	(2) Quality of Mobile service	Awareness	<ul style="list-style-type: none"> I have previously been informed about government mobile services. I have previously been trained to use government mobile services. 	<ul style="list-style-type: none"> I believe I would previously be informed about government mobile services. I assume some training before using government mobile services.
		Accessibility	<ul style="list-style-type: none"> I think government mobile services provide access to people with disabilities. 	<ul style="list-style-type: none"> I expect government mobile services to be accessed by people with disabilities.
		Availability	<ul style="list-style-type: none"> I believe government mobile services are available everywhere. I believe government mobile services are available anytime. I believe government mobile services are available to everybody. 	<ul style="list-style-type: none"> I think government mobile services should be available everywhere. I assume that government mobile services would be available anytime. I expect government mobile services would be available to everybody.
		Reliability	<ul style="list-style-type: none"> I consider government mobile services provide reliable information. I think government mobile services are fault-tolerant. My connection session to the government mobile service is always recoverable even if there is any interruption. 	<ul style="list-style-type: none"> I expect government mobile services to provide reliable information. I assume that government mobile services would be fault-tolerant. I expect my connection session to the government mobile service would always be recoverable even if there is any interruption.
		Accuracy	<ul style="list-style-type: none"> My government mobile service is always error-free. I am always provided with correct information when using government mobile services. I am always provided with accurate information when using government mobile services. 	<ul style="list-style-type: none"> I expect my government mobile service to be always error-free. I expect that I will always be provided with correct information when using government mobile services. I expect that I will always be provided with accurate information when using government mobile services.
		Responsiveness	<ul style="list-style-type: none"> I am satisfied with the speed by which the pages appear on the screen. 	<ul style="list-style-type: none"> I expect to be satisfied with the speed by which the pages appear on the screen.
		Courtesy & Helpfulness	<ul style="list-style-type: none"> I find it easy to find somebody to answer my questions. I receive the expected assistance when I need it. I receive courtesy calls after my request is fulfilled. 	<ul style="list-style-type: none"> I assume that it would be easy to find somebody to answer my questions. I assume that I would receive the expected assistance when I need it. I assume I would receive courtesy calls after my request is fulfilled.

Table 1: Quality of Service Statements. Adapted from [4]

3 Methodology and Underpinning Theory

This paper represents the sixth stage in our research of the success and failure factors of mGovernment service projects initiated by the devised generic mGovernment framework [17]. The focus of our initial literature review concentrated on existing studies that handled mGovernment user's topics. Academic databases, mainly Proquest, Computer and Information Systems Abstracts (CSA), ACM Digital Library and IEEE Explore were consulted. As mGovernment is a new but growing area of research, as evidenced by having its own international conference as well as specialized tracks in other international conferences, exploratory research is a legitimate methodology [18]. Such exploratory research assists in establishing the theoretical foundation for further examination and has been vital in developing a viable, theoretical framework. To proceed with this study, the case study method was chosen [19] where data are gathered through structured interviews and surveys [20]. Structured interviews are used with local government officials whilst surveys are used with mobile users as they are defined in the previous section. In fact, this methodology has been utilized by other researchers [21, 22] in similar studies.

In order to list most of mobile users' goals, needs and benefits, and, therefore, to classify them in homogenous groups, an extensive review of literature was conducted. Verifying the reality and practicality of those groups necessitated soliciting other researchers and industry experts' opinions through another web-based survey [23].

Researchers and academics were seen as an important source of knowledge as their work requires familiarity with all the developments in the field [24]. The selection criterion for researchers and academics was at least one peer-reviewed journal or conference publication regarding mobile and electronic government. Industry experts were sourced from different areas such as communication companies, mobile phone suppliers, application developers and consultants. The researchers also attended eGovernment and mGovernment conferences and trade shows to source likely experts. As Zmijewska & Lawrence [24] stated, such stakeholders, due to their first-hand experience, are likely to know exactly what helps and hinders successful diffusion of mobile government. services.

Operationalization of the goals constructs was largely based on questions used in prior studies with minor modifications to fit the context of mGovernment service end users. Additional open questions regarding their views about mServices were developed based on literature review and experts' survey findings. Needs and expectations items were measured on a one-to-five Likert scale ("not at all true" to "very true"). The instrument was then subjected to a pre-test procedure where selected individuals – five academics from Australia and seventeen potential respondents – were invited to complete the survey and provide comments for its refinement.

Consequently, the outcome was the deployment of a well-devised web-based survey to which mobile users were invited to participate anonymously providing their generic views. Email invitations were sent to all wireless and mobile communities around the world with the request to post the invitation on their sites and discussion forums. Although this survey is still in progress, 147 usable responses, after data cleansing, have been received and analysed forming the subject of this paper.

4 Demographic Data

Descriptors	Classes and Ranges	Active Users	Passive Users	Totals	Percentage
Gender	Men	7	88	95	70.0%
	Women	1	40	41	30.0%
Age	<18	2	36	38	27.7%
	18-24	5	54	59	43.0%
	25-34	1	30	31	22.6%
	35-49	1	7	8	6.0%
	50-65	0	1	1	0.7%
Education	High School	0	13	13	10.0%
	Vocational/Trade School	0	4	4	3.0%
	Bachelor's Degree	3	51	54	41.5%
	Master's Degree (MSc, MA, MBA)	2	39	41	31.5%
	Doctorate Degree (PhD)	3	15	18	14.0%
Income	\$10,000 - \$30,000 p/a	1	45	46	36.8%
	\$30,000 - \$50,000 p/a	1	31	32	25.6%
	\$50,000 - \$70,000 p/a	2	18	20	16.0%
	\$70,000 - \$90,000 p/a	1	9	10	8.0%
	\$90,000 - \$110,000 p/a	1	6	7	5.6%
	Over \$110,000 p/a	2	8	10	8.0%
Awareness of Government mobile Services	Less than 6 months ago	0	15	15	11.0%
	6 to 12 months ago	3	7	10	7.2%
	More than 1 year ago	1	9	10	7.2%
	More than 2 years ago	5	17	22	15.9%
	I have never heard of mobile government services	0	81	81	58.7%

Table 2: Survey Demographic Data

Sample descriptives indicate a strong domination of the mobile devices use by men (70%). Additional sample characteristics reflect a bias to young (<18 – 34) who represented 93%, and tertiary educated participants who represented over 86% and have been documented as being more likely to adopt and use mobile technology

innovations. Most of respondents (77%) are earners with incomes from \$10,000 - \$70,000 p/a – more biased towards low and middle income earners in communities. Lastly, active users represented 6.5% whilst passive users were 93.5% of the sample covered. The fact that 63% had never heard of mServices illustrates that mGovernment services are still in their infancy in terms of public consciousness.

5 Discussion of Quality of Service

Every service has a basic set of requirements in order for it to be of a good quality. Quality of service is then perceived as the definition of the service rendered to a stakeholder or user. In fact ambiguous and conflicting objectives may arise when there are many users' requirements to satisfy concurrently, in addition to having those requirements irreconcilable or imprecise. Hence, quality of service definitions vary depending on the perspective from which it is viewed. From the user's perspective, quality of service refers to the degree of 'goodness' of the mService in respect of its perceived usefulness. Davis [5] defines perceived usefulness as "the degree to which a person believes that using a particular system would enhance his or her job performance". Hatry [25] states that timeliness, accessibility, accuracy, and fairness are essential elements of quality of service when delivering it to the mobile user. The Johannesburg Metro Police Department (JMPD) uses an Integrated Information Management System to improve its effectiveness by creating a highly accessible and flexible information repository that is maintained on a real-time basis. At a potential crime/incident scene, the responding officer obtains up-to-the-minute information, including identification verification and outstanding arrest warrants, by mobile phone, allowing the officer to react quickly. The mobiles act as both data capture devices as well as data receiving feedback tools, providing police officers with essential information and empowering them with relevant additional facts [26]. Referring to Figure 1, the quality of mobile government services is analysed into seven components, or indicators, each of which is briefly discussed below.

Table 1 outlines each indicator's construct and its statements that investigated the needs and expectations of both active and passive users. Each type of users had its own set of statements which differed grammatically and contextually from the other. For example, one of the statements investigating awareness from an active user perspective would read:

I have previously been informed about government mobile services.

Whereas a passive user's statement would read:

I believe I would previously be informed about government mobile services.

5.1 Awareness Indicator Construct

Awareness is the first step in the users' experience, as users need to know that the service is in existence, what it does and how it is relevant to them. They then need to know in which ways they can contact and access the service. Community awareness and training programs are often key success factors for successful introduction and acceptance of new services [27]. For an mGovernment service such as mobile voting, awareness of the service is critical.

The Awareness construct examines both active and passive users' views concerning mService information and training. As shown in Table 2, over fifty-six percent (56.46%) of users agree that being previously informed about and trained before using an mServices is essential for the success of the service.

5.2 Accessibility Indicator Construct:

Accessibility refers to the process of securing or making the service open to a wider user population [28], including, where relevant, the assessment of eligibility criteria and the agreement to the specific design (nature and standards) of the appropriate service. All users should have access to their government services regardless of any disability, and this may require some "add-ons" as per the global accessibility guidelines defined by WAI [29].

The Accessibility construct examines both active and passive users opinions about providing people with disabilities access to mService. As shown in Table 2, over seventy-five percent (75.25%) of participants agreed that mServices should be accessible by people with disabilities, confirming the significance of the second component of quality-of-service benefit.

5.3 Availability Indicator Construct:

Service availability is the concept that users can obtain service on demand and without interruption, in spite of using failure-prone hardware and software elements to build the underlying infrastructure [30]. It is usually measured against time and expressed as a percentage. If service availability is measured from users' perspectives, probably as a percentage of successful access, it is more likely to reflect whether, and to what extent, a service really works. Obviously this is a major concern with wireless and mobile devices which may drop out as the mobile user changes location. Despite this, Kushchu & Kuscu [31] argue that mGovernment could be the solution for reaching citizens and exchanging information especially in remote areas.

This is actually confirmed by the survey responses as over seventy-six percent (76.13%) of active and passive users agreed that mServices should be available everywhere, anytime and to everybody, as shown in Table 2.

5.4 Reliability Indicator Construct:

Schay et al. [10] define service reliability as the “ability to perform the promised service dependably, accurately, and consistently”. Reliability is then a measure of an mGovernment service’s potential for failure since mobile users expect it to be reliable and sustainable - 24/7/365.

Providing reliable information, being fault-tolerant and always recoverable from any interruption are features that over sixty-four percent (64.22%) of active and passive users reported as being vital if an mService is to be considered reliable as shown in Table 3.

Construct	Users' Responses	Strongly Agree	Agree	Uncertain	Disagree	Strongly Disagree	Summary Graph
Awareness	Active	6.25%	43.75%	12.50%	18.75%	18.75%	
	Passive	13.99%	43.01%	22.28%	16.58%	4.15%	
	Total	13.40%	43.06%	21.53%	16.75%	5.26%	
	Summary	56.46%		21.53%	22.01%		
Accessibility	Active	0.00%	50.00%	25.00%	12.50%	12.50%	
	Passive	37.63%	39.78%	18.28%	3.23%	1.08%	
	Total	34.65%	40.59%	18.81%	3.96%	1.98%	
	Summary	75.25%		18.81%	5.94%		
Availability	Active	4.17%	58.33%	20.83%	12.50%	4.17%	
	Passive	29.02%	48.25%	15.03%	5.59%	2.10%	
	Total	27.10%	49.03%	15.48%	6.13%	2.26%	
	Summary	76.13%		15.48%	8.39%		
Reliability	Active	0.00%	29.17%	50.00%	12.50%	8.33%	
	Passive	23.18%	43.94%	23.53%	6.57%	2.77%	
	Total	21.41%	42.81%	25.56%	7.03%	3.19%	
	Summary	64.22%		25.56%	10.22%		
Accuracy	Active	0.00%	31.82%	22.73%	27.27%	18.18%	
	Passive	18.28%	47.59%	23.10%	8.62%	2.41%	
	Total	16.99%	46.47%	23.08%	9.94%	3.53%	
	Summary	63.46%		23.08%	13.46%		
Responsiveness	Active	0.00%	50.00%	37.50%	12.50%	0.00%	
	Passive	17.53%	51.55%	20.62%	9.28%	1.03%	
	Total	16.19%	51.43%	21.90%	9.52%	0.95%	
	Summary	67.62%		21.90%	10.48%		
Courtesy & Helpfulness	Active	0.00%	54.17%	12.50%	25.00%	8.33%	
	Passive	11.03%	40.00%	28.62%	16.21%	4.14%	
	Total	10.19%	41.08%	27.39%	16.88%	4.46%	
	Summary	51.27%		27.39%	21.34%		

Table 3: Quality of Service Constructs Analysis

5.5 Accuracy Indicator Construct:

Service accuracy is defined as the agreement between the offered and the promised services. It does not mean error free, rather a minimal error possible, service. As an example, in the case of the Finnish tram and metro ticket payment by mobile phone the system has a built-in time lag (to eliminate abuse), so that the ticket purchase cannot be initiated when a ticket inspector is arriving [32].

Over sixty-three percent (63.46%) of both active and passive users agreed that error-free mService, with correct and accurate information, is significant, confirming another indicator for quality of mService.

5.6 Responsiveness Indicator Construct:

Responsiveness indicates the speed with which mService requests are manipulated, pages are browsed, commands are achieved and acknowledgments are displayed. mServices may be hindered by latency when network traffic is high. Over sixty-seven percent (67.62%) of participants agreed that the speed with which the pages appear on the screen is important, confirming the significance of responsiveness as an indicator of quality of mServices.

5.7 Courtesy and Helpfulness Indicator Construct:

Respectful, considerate, friendly, helpful, polite and efficient are words used to describe courtesy and helpfulness as it relates to the behaviour of mGovernment service providers to mobile users, and may contribute to users' (dis)satisfaction. Carroll [33] found in her study that unless the services and applications of mGovernment meet citizens' needs, they will not achieve long-term, persistent use. Finding somebody to answer a question and provide needed assistance, in addition to receiving a courtesy call after a fulfilled request are still considered important elements for courtesy and helpfulness although just over fifty-one percent (51.27%) of participants agreed with these items on the survey.

6 Conclusions and Future Directions

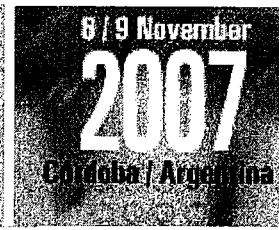
This paper presented the sixth stage in an ongoing research on the effective mobile government's services. It reports specifically on the findings of a current survey of mobile end-users' needs and expectations from utilising a government mobile service. The survey has attempted to practically ascertain and understand the real-world mobile end-users' opinions about a rendered government service via mobile technologies. The majority of respondents agreed that awareness, accessibility, availability, reliability, accuracy, responsiveness and courtesy and helpfulness are significant ingredients for a successful mService. This survey is based upon a theoretical devised model that analyses mobile user requirements to their main components, where quality of service represents one of the goals of GQM at a conceptual level.

Further studies will handle the survey analysis of the rest of goals. The results will contribute to the next stage into the authors' investigation of effective mobile government services in search of the factors that control an mService project's validity.

References

- [1] R. W'O Okot-Uma, *Electronic Governance: Re-inventing Good Governance*. vol. 2005 London, 2001.
- [2] O. Östberg, A Swedish View on 'Mobile Government', in *International Symposium on E & M-Government*, Seoul, Korea, 2003.
- [3] S. Albayrak, J. Wohltorf, S. Fricke, A. Heßler, and N. Noubissi Nougumo, *Service Engineering - Methodology for 3G beyond 3G Service Development*, Working paper, DAI-Labor of the Technische Universität Berlin, p. 3, 2003.
- [4] T. El-Kiki and E. Lawrence, A Multi-Perspective Effectiveness Evaluation Methodology for mGovernment (MPE²M-mG), in *IADIS International Conference - e-Commerce 2005*, Porto, Portugal, 2005.
- [5] F. D. Davis, "Perceived Usefulness, Perceived Ease of Use, and user Acceptance of Information Technology," *MIS Quarterly*, vol. 13, pp. 319-340, 1989.
- [6] D. W. Conrath and O. P. Mignen, What is being done to measure user satisfaction with EDP/MIS, *Information and Management*, pp. 7-19, 1990.
- [7] W. J. Doll, T. S. Raghunathan, J.-S. Lim, and Y. P. Gupta, A Confirmatory Factor Analysis of the User Information Satisfaction Instrument, *Information Systems Research*, vol. 6, pp. 177-188, 1995.
- [8] J. W. Henry and R. W. Stone, A Structural Equation Model Of End-User Satisfaction With A Computer-Based Medical Information System, *Information Resources Management Journal*, vol. 7, pp. 21-33, 1994.
- [9] G. Torkzadeh and W. J. Doll, Test-Retest Reliability of the End-User Computing Satisfaction Instrument, *Decision Sciences*, vol. 22, pp. 26-37, 1991.
- [10] B. W. Schay, M. E. Beach, J. A. Caldwell, and C. LaPolice, Using Standardized Outcome Measures in the Federal Government, *Revista: Human Resource Management (New York)*, vol. 41, pp. 355-368, 2002.
- [11] C. Centeno, R. van Bavel, and J. C. Burgelman, eGovernment in the EU in the next decade: The vision and key challenges, *The European Commission's Joint Research Centre*, Seville EUR 21376 EN, 4-5 March 2004.
- [12] T. El-Kiki and E. Lawrence, Efficiency in mGovernment Services: An Evaluation Framework, *WSEAS TRANSACTIONS ON INFORMATION SCIENCE AND APPLICATIONS*, vol. 3, pp. 416-426, February 2006.
- [13] V. Ndou, E-Government for Developing Countries: Opportunities and Challenges, 2004.
- [14] T. El-Kiki and E. Lawrence, Mobile User Satisfaction and Usage Analysis Model of mGovernment Services, in *EURO mGov 2005*, University of Sussex, Brighton, UK, 2006, pp. 254-263.
- [15] R. Solingen, van and E. Berghout, *The goal/question/metric method: a practical guide for quality improvement of software development*. London; Chicago: McGraw-Hill, 1999.

- [16] R. S. Kaplan and D. P. Norton, The Balanced Scorecard – measures that drive performance, in Harvard Business Review, 1992, pp. 70-79.
- [17] T. El-Kiki, E. Lawrence, and R. Steele, A Management Framework for Mobile Government Services, in COLLECTeR, Sydney, Australia, 2005.
- [18] J. Hussey and R. Hussey, Business Research methods: Qualitative and Quantative Approaches, 4th ed.: USA Pearson Education, 1997.
- [19] A. S. Lee, A Scientific Methodology for MIS Case Studies, MIS Quarterly, vol. 13, pp. 33-50, 1989.
- [20] A. Pinsonneault and K. L. Kraemer, Survey Research Methodology in Management Information Systems: An Assessment, Journal of Management Information Systems, vol. 10, pp. 75-106, 1993.
- [21] T. Guimaraes and M. Igbaria, Assessing user computing effectiveness: An integrated model, Journal of End User Computing, vol. 9, pp. 3-14, 1997.
- [22] P. Tait and I. Vessey, The effect of user involvement on system success: a contingency approach, MIS Quarterly, vol. March, 1988.
- [23] T. El-Kiki and E. Lawrence, Emerging Mobile Government Services: Strategies for Success, in The 20th Bled eConference eMergence: Merging and Emerging Technologies, Processes, and Institutions, Bled, Slovenia, 2007.
- [24] A. Zmijewska and E. Lawrence, Reshaping the Framework for Analysing Success of Mobile Payment Solutions, in IADIS International Conference - e-Commerce 2005, Porto, Portugal, 2005.
- [25] H. Hatry, Performance Measurement: Getting Results. Washington, DC: The Urban Institute Press, 1999.
- [26] I. Patel and G. White, Technical Implications And Business Recommendations For Building Open And Interoperable Platform For M-Services Provisioning, in From E-Government To M-Government, University of Sussex, Brighton, UK, 2005, pp. 313-323.
- [27] AOEMA, E-Government from a User's Perspective, Asia-Pacific Economic Cooperation (APEC), Hong Kong, China telwg29/BFSG/14, 21-26 March 2004 2004.
- [28] Usable Net, What is accessibility?. vol. 2006, 2004.
- [29] W3C, "Web Accessibility Initiative. vol. 2006, 2006.
- [30] CERN, Service Level Status project - Manual for service managers. vol. 2006, 2006.
- [31] I. Kushchu and M. H. Kuscu, From E-government to M-government: Facing the Inevitable, mGovlab, 2003.
- [32] R. B. Suomi, Five Finnish Innovations in Mobile Government and their root factors, in COLLECTeR Europe, Basel, Switzerland, 2006.
- [33] J. Carroll, Risky Business: Will Citizens accept M-Government in the Long Term, in From E-Government To M-Government, University of Sussex, Brighton, UK, 2005, pp. 77-87.



Paper12: Mobile User Needs: Quality of Service
Author(s): Tarek El-Kiki and Elaine Lawrence
Status: Accepted

Comments for the authors:

Reviewer 1:

I can't see the text inside boxes in Fig. 1.

Nice work.

Reviewer 2:

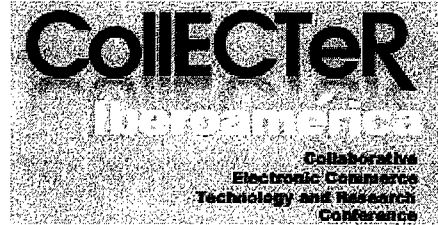
- The sentence: "Davis [7] defines perceived usefulness of a service as "the degree to which a person believes that using a particular system would enhance his or her job performance"." has slipped twice (paragraph 2 and 5)
- In table 1 column "Goals", is the figure (2) relevant?
- Those references are not mentioned at all in the text:
- 8, 14, 16, 28 and 29
- Are all mServices under test from Australia? This is not clearly stated
- Although users are from all over the world? Neither this is not clearly stated
- Diagrams on table 3 are not readable
- As you have over 600 word under the limit, I think you could give extended explanation on the importance of the statements that difference between passive and active user. i.e. "I believe" or "I think" are used by both of them...

Reviewer 3:

The paper presents the design and the results of an on-line anonymous survey whose objective is to assess which QoS-related needs are more important for mobile users (active or passive) of a mGovernment service. Thus, the title is not totally in accordance with the paper contents, since it seems to refer to all mobile users and not only to mGovernment users.

There are three differentiated parts in the paper:

- The description of how the survey itself was designed is good, and in fact it seems that the methodology followed to do it has been correct and complete. Only this reviewer finds some of the indicators stated in a too strong way, with no quantitative requirements (e.g. it says that mGov. services should be available "everywhere" and "anytime", when not even the underlying mobile service is capable of reaching 100% of those



measurements).

- The demographic data part presents serious flaws which effectively make the results of the survey representative of no other universe than the sample itself (which, additionally, is very small). This means that there is no way of statistically extracting or extrapolating any conclusion beyond the people that wanted to answer the survey, since the necessary mathematical requisites of the sample selection have not been met. Also, the vast majority of the people who answered the survey are not active mGovernment users, and equally important, most of them had not even heard of such services ever.
- The description of the results is correct, although it is important to take into account the previous bullet to know the extent to which they are significant.

This reviewer would like to encourage the authors to continue with the survey study and to keep working in a more precise definition of the considered universe and the representativeness of the studied sample.