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Categorizing 'intention to use' e-government services through mobile phone: the importance of front loading activities

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Abstract
E-government has often been heralded as the new way forwards for emerging countries. While many such countries are already offering e-government services and are gearing up for further growth, little is actually known of the forming stages that are necessary to ensure a greater rate of success and avoid the traditional failure traps linked to new technology and information system adoption and diffusion. We situate our research in the case of mobile phone as a reflection of the current market situation in emerging countries. We contend, in this paper, that more research is needed to understand future intention to use e-government services through mobile phone technology. Front loading activities both from a government and technology perspectives are required to facilitate the decision making process by users.

Key words
Mobile Phone, E-Government, M-Government, Front Loading, Intention to Use

1. Background
By 2012 the total number of mobile phone subscribers will increase by more than 2 billion worldwide (Burger, 2007). Means of delivering richer multimedia and data services content along with billing and payment mechanisms are currently being further developed. These improvements are perceived as key sustainability and growth in usage rate. Yet, security issues, specific technical issues (battery life) and a better definition of socio-technical relationships remain crucial for m-services to achieve their true potential. Private enterprises, including banks, FMCG and media companies lead these initiatives. Now many governments have also realized that they have to play a proactive and dynamic role in shaping future overall consumption through e-government services.

The frontier of m-services, SMS technology, provides means of delivering information about train fares, movie tickets and toll ways as well as micro-payments (vending machines). These types of m-services are not bound with limitations of terrestrial properties, therefore inaccessible geographical areas could be provided with new opportunities reducing the digital divide. Different ICT technologies are available, but are not standardized yet. Voice or data

are often privileged but not both at the same time. Nomadic computing has yet to be integrated by all consumer electronics and within consumer practices. As already described by Christensen (1997 in (Norman, 1998)) technology strategy are diverse with basic and advanced features competing for user engagement practices (Figure 1). Indeed, from deterministic perspective, Sheth has already developed a typology of innovation resistance, which included what he termed 'Habit Resistance' (Sheth, 1981). This followed Mittelsteadt et al.'s (1976) symbolic adoption or rejection model where the consumer may have symbolically accepted the innovation but not sufficiently enough to try, which in turn do not lead to adoption. Gatignon and Robertson (1991) suggest that non-adoption of an innovation may be explained by either rejection or postponement depending on the context. Szmigin and Foxall (1998) built upon these works and categorized innovation resistance into three varieties: rejection, postponement and opposition. Following these perspectives the idea of context is defined as "the set of environmental states and settings that either determines an application's behavior or in which an application event occurs and is interesting to the user" (Chen & Kotz, 2000). In other words as defined by Kim et al. (2002) "any personal and environmental information that may influence the person when he/she is using Mobile Internet". The basic elements of environmental surrounding such as network connectivity, communication costs, user profile, location, lighting, noise, and time of day, week, month, and season of the year (Chen & Kotz, 2000; Schilit, Norman, & Want, 1994) are paramount. In addition, we understand practice with its three traditional parameter including practitioners (people actually using / experiencing / creating), practices as defined by Jarzabkowski et al. (2007) as "the social, symbolic and material tools through which […] work is done" and praxis that embraces the flow and timing of activities.

Others including Rogers (1995) created the adoption of innovation framework which identified desirable factors for the success of a new product or innovation including relative advantage, compatibility, complexity, communicability observability and triability. Further models such as the Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB) (Ajzen, 1985, 1991; Ajzen & Fishbein, 1980) provide a theoretical framework for understanding better the human behavior factors. According to TRA and TPB, a person's action is determined by the intention to perform; a function of attitude and subjective norms, which can be traced back to a person's behavioral and normative beliefs. An adaptation of the TRA and influenced by TPB, the technology acceptance model (TAM) was developed by Davis (1989) to guide IS/IT acceptance research (Holak & Lehmann, 1990; Pagani, 2004; Rogers, 1995). The central idea behind the TAM is that a person's behavioral intention to use a 'system' (hardware, software, innovation etc) is determined primarily by two factors, perceived ease of use and perceived usefulness. We contend that front loading activities both at individual and household level need to be explored to complete our understanding of 'intention' in our case to use e-government services.

Moreover, the vast majority of consumers are expected to be pragmatic and conservative. They tend to wait before buying new technologies expecting opinion leaders to test innovation. They watch and learn from the experience of other users before committing. They wait until prices settled down and drop, for technology standardization. They reflect on the actual usage of the product and if it is truly capable of meeting their needs.

2. Front loading e-government strategies: shaping intention to use

Transition and changes for any consumers are difficult and costly. While most ICT will have been validated in laboratory conditions, yet too often reliability in the field and suitability for everyday consumption fail. In the case of ICT and government services suitability, including higher value added capacity being made available is paramount to create a dynamic comparative advantage over current practices and processes. On one hand, the institutional capacity to shift to higher value added services and processes (standard operating procedures) need to be in place and trusted by the potential users. On the other hand, mutually supportive roles leading to a clear cumulative sequence of change are required to provide the necessary investment (time and effort) in users' human capital development. The maturity or skill to allocate resources productively to make progress may not be present. Improvement to the systems and users' models through a process of systematic validation is required.

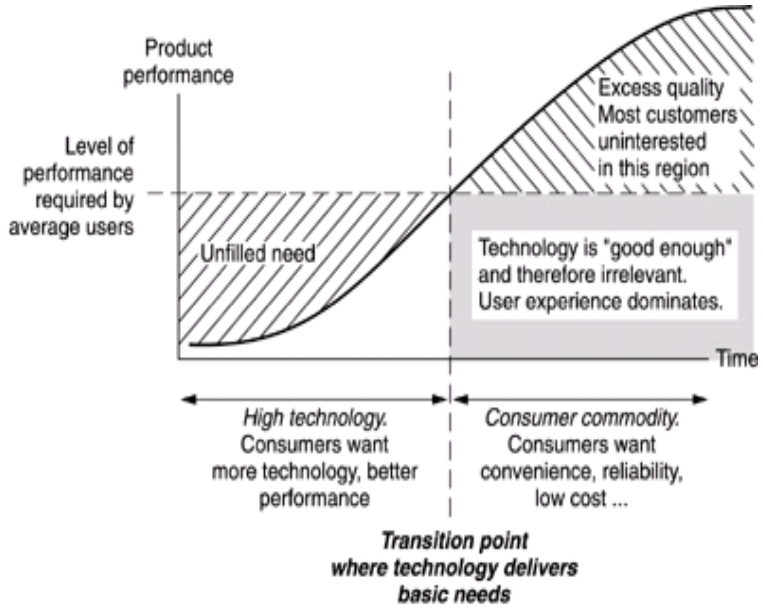

Figure 1: The needs-satisfaction curve of a technology. New technologies start out at the bottom left of the curve, delivering less than the customers require. As a result, customers demand better technology and more features, regardless of the cost or inconvenience. A transition occurs when the technology cannot satisfy the basic needs. (Modified from Christensen [1997 in (Norman, 1998)]) [1].

We define front loading as a strategy that seeks to improve pre-service activity performance by shifting the identification and the solving of problems to earlier phases in the process. Front loading activities are considered as an iterative as well as interactive process where government, technology providers and consumers/citizen engage with in a win-win situation game improving the overall attraction of the e-government experience. With the front loading problem approach, all users of a system are concerned with identification of the problem and sharing information on how to solve it. The aims of front loading are to reduce the number of substandard experiences and eliminate bottlenecks in the process, to increase loyalty and trust in the system, utilize opportunities offered by new technology to reduce cycle time and

[1] http://mitpress.mit.edu/books/NORVH/chapter2.html

increase convenience (Thomke & Fujimoto, 2000). Because pre-services activities are not fully acknowledged by stakeholders, governments have not given too much attention to imperfect and incorrect processes and how this impacts on usage and engagement with a service.

When an individual fails or has difficulty to learn something as quickly and easily as (s)he would like to, (s)he often experiences public disclosure embarrassment and private humiliation, fear, anxiety and pain (Brookfield, 1995). Front loading activities typically consist of a number of different steps. The first step involves learning to know ourselves as consumers of government services. There are different types of individuals, households and families, and within these, the individuals are also different. The way and the manner in which we use e-government services can be considered as a direct reflection of how we interpret how others are dealing with the same resources. We try to minimize unpleasant experiences and replicate the things that have affirmed or inspired us. When one has been acting in a familiar environment for a long period (civil servant services) we tend to forget what it feels like to come to this place as a new individual citizen. Here learning and communication style have a certain importance to minimize misunderstanding and acquire the right level of communication competences (Gudykunst, 1993). The second step involves being surprised by the familiar. The frenetic nature of government activities within our lives may leave little time for structured critical reflection on how to best access government services. Without an indication to the contrary, we may assume that diverging from the norm and challenging accepted practices may be perceived as a sign of misunderstanding. The third step usually involves solving problems collaboratively. Individuals have many pressing needs both regarding the type of government services offered and the way they are made available and accessible through mobile phone. Coming together with the whole community using that particular government e-services and determining the priority issues/problems to be solved encourages engagement with the medium. As a group, these can be addressed where common theme emerged and moment of recognition abound opening up new avenues of inquiries. Insights, ideas, tips can then be shared and put into practice by the whole group.

In front loading activities, to actually be convinced to engage with the exercise in the first place is paramount, hence the importance to judge intentions. Indeed, few consumers use any of the widely available methods (Table 1). The mundane nature of government services seems to only be transferred online with difficulty. While a new set of reference to form a new ‘m-cultural capital’ through data transfer via mobile phone is required, many current government services both at local and national level are finding it hard to cope with the variety of segments and needs. From the outside, extrinsic motivation is hard to generate as too often, government services are synonymous of red tape, long waiting queues and inappropriate answer. An extrinsically motivated person should be able to work on a task even when they have little interest in it because of the anticipated satisfaction they will get from some reward. We argue that the government have not put in place the necessary processes and efforts to deliver an appropriate set of rewards. Indeed, positive reinforcement seems also to short change consumers/citizens. Positive reinforcements are something like we will generally work to get. However, it assumes a current active relationship between the government and the consumers/citizen where both are ready to participate. Many consumer may be ready to engage and participate but do not have any real opportunities offered by the government. Indeed, few governments have clear specific online marketing strategies “*where a consequence is presented dependent on a behavior leading to the behavior to become more*

likely to occur. The behavior becoming more likely to occur because and only because of the consequence[2]."

Few consumers have ever had a memorable e-government experience and are willing to spend time and effort to increase the chance of this event reoccurring. In this aspect, social

E-government Services for individuals	**Current Status / Possible Status**	**E-government services for enterprises**	**Current Status / Possible Status**
Income Tax Declaration	4/4	Social contribution for employees	4/4
Job Searches by labor Offices	1/3	Corporation tax: declaration, notification	4/4
Social security benefits	1/4	VAT: declaration, notification	4/4
Personal documents	3/3	Registration of a new company	2/4
Car registration	3/4	Submission of data to statistical offices	0/3
Application for building/planning permission	1/4	Customs declarations	3/4
Declaration to the police	3/3	Environment-related permits	2/4
Public libraries	3/3	Public procurement	3/4
Certificates (birth, marriage)	1/3		
Enrolment in higher education/university	1/4		
Announcement of moving (change of address)	1/3		
Health related services	1/4		
Stage 1 Information: online information about public services Stage 2 Interaction: downloading of forms Stage 3 Two way interaction: processing of forms, including authentication Stage 4 Transaction: full case handling, decision and delivery (payment)			

Table 1: E- government services in Turkey and the current status

motivations become important. Achievement is a difficult concept but crucially important. Achievement motivated people usually want feedback, set themselves high but achievable objectives, are concerned for personal achievement rather than a reward of success and desire job relevant feedback (how well I am doing?) rather than for attitudinal feedback (how well do you like me?). Procedures need to be clear and transparent with immediate feedback and update a too often alien concept to civil servant idea of time. This also needs to be facilitated through a user friendly technological platform. Lastly, we consider the impact of intrinsic motivation. The motivation that comes from the pleasure that one gets from the task itself or from the sense of satisfaction in completing or even working on a task. This could well be through the feeling of being a good citizen, having completed the often unpleasant task or accessing finally what is due to you. Lack of interest in e-government must not be related to facetious m-phone distractors, trivial information provision, poor choice and quality performance and bureaucratic demand.

In addition, little is known about the way in which families divide the responsibility for household-government related tasks in an ICT environment ((Marshall & Anderson, 2000) in the case of shopping). Households have classically developed interdependent, gender-differentiated divisions of household tasks, although they share several tasks. There is congruence between what they expect and how they actually divide the responsibility for household tasks. Control over what is necessary to be done to complete government requirement raises some interesting questions about the concept of 'gatekeeper' and who is the primary individual targeted. Sharing taxes declaration for example allows household members to be aware of the costs and overall budget cost evaluations against monthly

[2] http://psych.athabascau.ca/html/prtut/reinpair.htm

earnings. In addition, by default, the person responsible for government related matters is indirectly in charge of knowing about new requirements/products, where the services are located and the requirement to allow completion as well as when it is required to complete the task.

3. Conceptualizing frontloading as factors that affect the users' intention to use the services

Long-term experience has shown that precisely preparation is the most critical part of any technical project because it is responsible for the largest and often hidden sources of errors. Errors due to lack of foresight may usually be overcome if necessary precautions are taken concerning users, creator, tools and the manner of working. Improvisations in these areas often lead to long term disloyalty and clearly diminish the theoretical efficiency gain.

Three main limiting factors are currently curtailing the diffusion of e-government initiatives in general and front loading activity in particular, a) limited access to and experience with resources for e-government services, development and delivery, b) uncertainty about the legal status of many services including digital signature, c) lack of reward system tied to innovation at institution level. The most urgent need seems to emerge as the lack of understanding and adaptability regarding the tools, language and protocols associated with the ICT. The first requirement is to foster a positive attitude towards the new models and services that will allow initial experiences to be gained and shared. In addition, the instructional aspect and learning steps should not be neglected. Like any services rules, aims needs to be present to motivate users. The consequences of adopting the new services should be clearly seen in the outcome product / service experience. The interactive aspects add another level of novelty and change both from a technological and practice perspective. As technology structures are emergent not embodied, little is known about stability, predictability or relative completeness. Appropriation of the technology becomes then crucial in shaping the situated use of technology (context).

We draw our inspiration from marketing theory. Amongst these, Hierarchy of effect model (awareness, knowledge, liking, preference, conviction, purchase) reflects the cognitive stage, affective stage and behavior stage. Alternatively, the AIDA framework (awareness, interest, desire, action) link to the customer response index (awareness, comprehend, interested, intention, action) are utilized, especially the early steps, to create a framework in defining intention to use from a consumer practice perspective. From another perspective, Soft Bridge model allows traditional characteristics to be adopted to specific context (oral, visual and hearing disabilities). While basic model factors include user, modality, interface, device and network, the Soft Bridge model adapted to visually impaired users include factors such as spoken English, voice, audio, hand set, telephone. Following the same principle, for hearing impaired users factors such as written English, text, graphical, PC and the Internet are involved. We are utilizing a Soft Bridge approach for our front loading model in the case of users located in inaccessible geographical areas, for example.

The themes conceptualized include five context related items, namely context association rule, context mediation, context awareness classifier, context sharing and context preparation mediation. A higher level of abstraction is kept as policy specificity will require to be embedded in any future questionnaire. These themes are currently still in the definition process through an online discussion group with e-government services officers in 40 cities.

3.1. Context association rule

The set of factors that indirectly influence and mediate the level of engagement with e-government services through cellular phones. It encompasses

- the regulatory environment
- e-government procedural policies
- capacity for engagement with other privately held services (critical mass argument)
- personal circumstances including IT literacy, possessed phone generation, provider and payment access abilities

3.2. Context mediation

It comprises several categories including computing, user and physical contexts. Further categories include the larger picture in which the user operates and the particular set of circumstances from which a need for information arises. Modalities of usage allow segmentation between end-user contexts, private / public contexts, and dynamic context as part of the wider social context.

3.3. Context awareness classifier

It provides where the e-government services stand in relation with other services delivered through cellular phone. Some classifiers involve use of push (SMS, news feed) or pull (m-signature) activities. These early efforts towards registering, subscribing and compliance of access to e-documentation are greatly influencing the familiarity and the experience with the channel, therefore influence the perception of outcome.

3.4. Context sharing

Other stakeholders involved are increasing or decreasing the early process for adoption or diffusion. These include learning facilities, peers and gate-keepers. Fluency in using databases, familiarity with virtual private network (VPN), personal information manager (PIM), and personal area network (PAN) are also influential. Other areas of personal expertise such as evaluation, monitoring, consideration and anticipation located within the wider social network of individual also play a crucial role.

3.5. Context preparation mediation

A further Halo effect can be deduced through the multiplication effect, where as the more active users you have around you, the more likely that you will try to engage with the services. Linked to the above, system confidence is improved gradually just by observing the others' experiences. Finally, three interrelated effects, which are attention, intention and frequency, arise. Attention effect is derived from a mundane discussion among users underlying specific opportunities available within the system. Once attention is facilitated, then intention becomes more urgent through a bandwagon effect. This is reinforced through the increased usage frequency effect.

4. Conclusion and Discussion

We surmise that intention to use or current use of the services could be better understood via such methods. Moreover, approaches of cost reduction for user groups in terms of time, money and effort by the aid of using e-government services are also within this scope of this study. Lastly, effects of front-loading activities on the spread of diffusion will be analyzed as the more you discuss an innovation before it comes to a market, the more successful diffusion of the product or service to be.

In summary the following concepts are core to our understanding:

- Focus on the identification of what 'practices' are prevalent; whom engages in them; which combination practices occur in particular times and places
- Government e-services vs. current face to face/voice telephony services: 'dispersed' and 'integrated' practices.
- Examine the manner in which potential and current consumption of e-government services practices are embedded within the complex rhythms and everyday domestic routines of contemporary households.
- 'Intention' is a function of the front loading efforts made by the government coordinated by 'understandings', 'procedures' and 'engagements'.

E-government services engagement and more specifically the development of its services do not occur in a vacuum. User practices, acceptance of change, location, need urgency and skills are leading to strong structural imbalances. Contrasting motives, improvisation, evolving relationships and interpersonal tensions seem to have a greater impact in judging the intention to use. Defiance both from practices' and practitioners' perspectives is visible. Our work emphasize the multiplicity of histories and trajectories both from a government, service provider and user perspectives. We envisage that the co-existence of past practices and new preparation methods will be at odds with one another a foreseeable period of time. Pluralism between the different municipalities while fostering innovation at early stage will need to be standardized to include the masses. The actualization of activities such as service range, service level, interaction level and transaction level have up to now diminished the crucial importance of less observable activities including front loading. Lastly, the fluidity of the government policy, including the close social tensions between central and local government, are already shown to have an impact in both adoption of services and preparation organization. While incomplete strategy is clearly present in many cases, few actions are undertaken to confront or challenge the ICT social issues and opportunities offered by the m-government.

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