Mobile phone and e-government in Turkey: Practices and technological choices at the cross-road

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Abstract

Enhanced data services through mobile phones are expected to be soon fully transactional and embedded within future mobile consumption practices. While private services will surely continue to take the lead, others such as government and NGOs will become more prominent m-players. It is not yet sure which form of technological standards will take the lead including enhance SMS based operations or Internet based specifically developed mobile phone applications. With the introduction of interactive transactions via mobile phones, currently untapped segment of the populations (without computers) have the potential to be accessed. Our research, as a reflection of the current market situation in an emerging country context, in the case of mobile phones analyzes the current needs or emergence of dependencies regarding the use of m/e-government services from the perspective of municipality officers. We contend that more research is needed to understand current preparatory bottlenecks and front loading activities to be able to encourage future intention to use e-government services through mobile phone technologies. This study highlights and interprets the current emerging practices and praxis for consuming m-government services within government.

Key words: m-government, e-government, cellular phone, government services, practice

1. Introduction

Research indicates, 27% of the Turkish households have a computer and access to the Internet (TUİK, 2007). ADSL is the most common access type (78%) preferred both by enterprises and households. ADSL service provision in Turkey was privatized in 2007 and government dominance over the ISP was reduced, increasing Internet usage figures from 2% to 27% of households. Yet, the divide among urban and rural areas still remains with 33% and 14% penetrations, respectively (Yücel, 2006). Regarding mobile phone in particular, according to TÜİK (2006) data, about 72.5% of the Turkish population has access to a mobile telephony device. Critical mass to change the way people perceive and purchase goods and services is already present and spread fairly homogeneously across the country.[1] The mobile phone park is however, different across geographical locations and rapid upgrades are usually popular. Improvements in services value and volume of data exchange will lead

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[1] http://www.ecommercetimes.com/story/57788.html

to new types of more business / government oriented services to be offered via mobile phones. Transactional trends are expected to grow along the diffusion of 3G and advanced "smart" handsets. Advanced designs and features will introduce more user friendly services and increase the frequency of m-transactions and the number of active, regular users. Such services should also include government services and NGOs as a balance to private sector led initiatives. From these perspectives, a better balance of powers between privately lead initiatives and government's wider expectations such as democracy and transparency or social inclusion / exclusion of minorities through an open technology debate can be proactively managed. M-government applications in emerging markets need to be aligned through certain global standards aiming at positive social development, not technological chaos / divide. In providing m-government services, a review of the current needs and priorities of Turkey needs to be re-visited. As a first step, a social in practice perspective is adopted with a business approach modeling that incorporates the service provider / content creator point of views, in our case the municipality officers, rather than technology driven applications only. Emerging users can only then be incorporated for an interactive practice.

The following section first introduces government and technology in Turkey. In the third section, m-government possibilities are discussed along the possible main approaches that involve both basic and advanced models. Next, methodology and data collection is presented followed by the results of the municipality officers' answers analysis. Lastly, concluding remarks and future research directions are delivered.

2. Government and technology in Turkey

The term government, from a narrow perspective, is the governing authority of a political unit, or in a wider perspective the executioner and legislation powers of a state. In Turkish practice, the terms 'government' and 'state' are used interchangeably in representing the power of the state authority. Turkish citizens acknowledge government as a paternal entity that not only governs the people, but also takes care of them. Subsequent to the establishment of the Republic in 1923, Turkish government adopted the Republican Parliamentary model with secular approaches. Turkish Constitutional law asserts 'statism' as one of the six principles of the Republic of Turkey, which defines the role of the state in the re-construction of the Turkish social life. There still happens to be a strong dominance of government in Turkey as a remainder result of the post WWI industrialization attempts been mainly prosecuted by the government. Yet, privatization actions have been undertaken since 1980s to release government's dominance. E-government is defined as *"governments providing information about services, as well as the ability to conduct government transactions, via the Internet"* (BusinessWire, 2004). All the operational procedures of the services that will be provided via e-government need to be clear, documented and standardized. E-government services should not necessarily aim to replace traditional services, but should rather be complementary as the most important involves accessibility 7 days a week, 24 hours a day.

"E-government uses improved Internet-based technology to make it easy for citizens and businesses to interact with the government, save taxpayer dollars and streamline citizen-to-government communications" (Bush, 2002 as quoted in (Gauld & Goldfinch, 2006, p.27)).

In its latest development plan, Turkish government aims to contribute to the formation of information society and tries to take a more proactive role in adopting the latest technology. E-government is seen as a new tool that allows efficient administration, responsive to the needs of the new knowledge economy to provide better public services. Therefore, initiatives placed for e-government service provisions are even more crucial in the context of emerging markets where capacity for information gathering, integration and archival remain relatively low. As a candidate for EU, Turkey has to develop and execute certain EU regulations including e-government initiatives through the e-Europe 2005 Action Plan[2]. Projects such as unification of citizenship identifications numbers, legalization of e-signature, tax collection are several services that could be named among the mentioned e-government services. There are 20 e-government applications that the EU prioritizes for its members

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[2] http://ec.europa.eu/information_society/eeurope/2002/news_library/documents/eeurope2005/eeurope2005_en.pdf

and candidates (Eurostat, 2007). Table 1 lists these services, and provides an evaluation of the current situation in Turkey. It can be stated that e-government applications in Turkey have been so far favoring enterprises rather than individual citizens. In terms of e-readiness, Turkey had not provided a good performance as it was ranked 60th in the world in 2005, and went down to 76th in 2008, looking already like a story of lost opportunities (Bertucci, 2008). As a result, Turkey prepared a strategic plan to promote information society and announced the following 7 topics as prioritized (ResmiGazete, 2006);

1. Social transition towards "equal ICT opportunities for all"
This initiative involves increasing social and economic benefits by enabling citizens to effectively use ICT in their daily lives as well as businesses.
2. Penetration of ICT to enterprises through "competitive advantage for all"
This initiative support the emergence of e-commerce by enabling SME's to own computers and have Internet access.
3. Citizen focused government services by "provision of high quality public services"
This initiative aims at improving quality of services provided by government through the utilization of ICT (i.e., receipt date of legal documents, information process levels, request for additional immediate actions and documents) especially in services where demand is high.
4. Modernization in public administration by "ICT supported reforms in public administration"
This initiative aims at reforming the entrenched deterministic view of civil services. Formation of e-government via support of ICT that prioritizes productivity and citizen satisfaction in compatible fashion with the environment in Turkey is the ultimate goal sought.
5. Globally competitive IT Industry
This initiative aims at supporting R&D in the IT sector to enhance its international competitiveness. ICT has to be placed into a larger context and understood from that perspective
6. Competitive, diffused and cheap communication infrastructure and services through "high quality, and cheap wideband access for all"
This initiative aims to track the usefulness and impact of the broader social context on e-government opportunities (i.e., pricing, private access). High speed, reliable Internet access is aimed by promoting better infrastructure in telecommunications.
7. Improving R&D and Innovativeness by "new products and services in response to demand in global markets"
This initiative aims at prioritizing R&D activities in ICT sector that has a growing demand in the global markets.

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	¼	VAT: declaration, notification	4/4
Personal documents	3/3	Registration of a new company	2/4
Car registration	¾	Submission of data to statistical offices	0/3
Application for building/planning permission	¼	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	¼		
Announcement of moving (change of address)	1/3		
Health related services	¼		
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

Some early problems have already emerged including, cultural clashes with national processes, environmental factors related to the type of technology and lack of standards (compatibility), information and data inadequacies in merging services records, lack of management skills, lack of training, political infighting, inadequate processes to channel the relevant information, and lack of macro feasible strategy.

Regarding the facts underlined above, a clear lack of business models (see for example Gisticsk Incorporation) and holistic approach is obstructing the Turkish effort towards m-government promised (Figure 1).

--- Insert Figure 1 about here ---

In adapting the above model to the context of e-government, in Turkey, the following mirroring definitions could be undertaken:

- *Business theory* should represent the theoretical approach of the e-government services, which can differ from institution to institution.

- *Business models and designs* should describe the e-government services that need to be provided to the individuals and enterprises. It is crucial to identify the media that the specific service will be provided through.

- *Strategy formation and refinement* should include e-government services that need to be strategically decided using either deductive or inductive methodologies. This should include governmental high level meetings to reach to consensus.

- *Skills development* should be achieved either by outsourcing the necessary elements or by training/hiring the necessary skills.

- *Operations control*, which is very crucial, should involve all the regulatory aspects that need to be covered and based on a control of continuum.

- *Problem solving* should require internal and external problem solving activities. Responsible teams should be set up, i.e., war room approach could be a useful problem solving activity.

3. The transition towards M-government in Turkey

Boyera (2007) states that the majority of the world still lack the information infrastructures needed for ICT development, therefore developing countries could prefer to develop their own easy-to-use tools depending on their citizens' needs. For example, investments on mobile phone telecommunications in Africa changed everyday practices radically, i.e., cab fares and grocery can be paid through mobile phones (Eagle, 2007). When the penetration levels of mobile phone services (72%) and Internet services (27%) are compared, it is seen that high levels of mobile telephony usage present an enormous potential for government services over mobile platforms in Turkey (Aykaç, Eryarsoy, Kasap, & Kervenoael, 2007). In this context, m-government initiatives should also follow Boyera's recommendation and develop mobile phone specific government services.

It is widely accepted that many users define and re-define the importance of their mobile phone as a dynamic socially co-constructed technology. As emphasized in *situativity* theory (Barab & Duffy, 2000) and social theory of learning (Wenger, 1998) it has been demonstrated that cellular devices are being adapted to various social uses beyond work and security and that their usage and attached meanings were linked to identity development, in turn often derived from social interactions. Mobile phones are ubiquitous and can be perceived as part of the owners' self-identity (Wilska, 2003). What

become relevant is to understand the interplay between the practitioners, technology and the surrounding space. Although people buy high technology products, it does not necessarily mean that all applications and services provided are actively utilized. It is found that symbolic advantages of a product may override its functional advantages (Dedeoglu, 2004; Ozcan & Kocak, 2003). There are different types of m-users ranging from road warriors, technophile, technophobe, happy snappers, thumb jockey to ready to make the switch.[3] Besides the basic usefulness of mobile phones and the primary purpose of voice communication, emotional secondary rationales depending on user's age, gender and socio-context modify the meaning of the devices (Bautsch et al., 2001). Geser (2004) pointed out that a person may buy a mobile for mundane purposes only such as to be able to call for help in emergency situations, but at times gets addicted to other opportunities and intangibles offered by mobiles such social imagery, social networking possibilities. Although many of the users think they will use their mobile only for emergency situations non-ritually, they turn out to expand their use in everyday situations whenever they find the chance (Geser, 2004). The expansion may be intrinsic or extrinsic: according to the VALS model, user may like to use all the services that have been paid for and may be encouraged or forced (in that case using other specific services is negative re-enforcer, which reduces the anxiety by social pressure) by his social environment to use his mobile in other more abstract contexts.

Provision of m-government services could follow a business modeling approach. There are five main models, from basic voice based services to more advanced data-digital services. Additionally, the business models described in their early stages under "basic models" can also be provided together with more sophisticated models according to the demand of the citizens.

5.1 Basic models

Talk-to-government model or Call center model, Smart Plug-ins model, Gateway Service Centre and Smart Services model (Conradie, 2006): They involve the usage of existing resources in the context of e/m-government by plugging them into existing countrywide telecommunication networks, such as that of the Post Office, call centers or large commercial companies ICT resources. This service could be accessible via all kinds of telephones, not necessarily only through mobile phones. Even public phones could be used to reach the integrated government services' call center, where the information call center agent could complete transactions. Provision of sophisticated services could also be possible by the integration of Interactive Voice Response (IVR) and Computer Telephony Integration (CTI) technologies. Services provided through call center model could involve integration of government service provision channels. Additionally, security information about the prospected users could be stored (encrypted) via authentication software which would allow the service call center agents to authenticate calling citizens. In cases of signature required transactions, the caller could either be diverted to a physical desk or transaction could be completed by an e-signature (where possible) via the Internet. However, authentication procedures might require citizens' publicly undisclosed information, which would require certain security measures as well as well planned storage facilities. An advantage for this model is the low costs associates due to non-data transmissions involved, as well as the easy of use for the majority of the citizens, even for disabled individuals except for mute and deaf.

Mobile phone model and M- Services model (Conradie, 2006): Basic e-government services could be provided via mobile phones using SMS (short message service) and MMS (multi-media service) infrastructures. It should be noted that most mobile phones and some land line phones posses SMS and MMS capabilities. M-government services provided could be very similar to Global System for Mobile Communications (GSM) service providers' invoice information services. Both the request and provision of the service could be processed via SMS and/or MMS. In cases where only form delivery is needed, MMS might provide a feasible alternative. Mobile banking facilities could be utilized to process tax, fee, and levy payments. Authentication required to complete transactions should involve pre-registry of mobile phones and their associated phone numbers. Some security weakness that might be involved in cases of phone loss could be overcome by integration of ID chips

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[3] http://www.uswitch.com/Mobiles/Type-Of-User.html

(electronic IDs) via SIM technologies. Transactions that demand citizen signatures could also be completed via m-signatures. This is particularly adapted to rural areas.

5.2 Sophisticated models

Voice and digital data integration: This service could be accessible via all kinds of telephones, not necessarily only through mobile phones. In this model, citizen calls that are received by IVR/call center agents are transferred to CTI, where the calling citizen is provided with alternative services and requested to process transactions through dialing numbers. Advanced services could be designed where direct access to predetermined m-government services might be reached through a particular keypad. Data transfer could also be integrated in these types of services upon voice authentication. This would require advanced security measures such as pre-certification of keypad functions which are often available in new generation mobile devices (WAP, 3G enabled, Blackberry, PDAs). This approach is more advanced compared to the traditional Government Online services or Computerized Counter Services models (Conradie, 2006).

Direct digital data transmission: This service could be accessible only via mobile phones platforms that involve certain advanced features. Downloading, filling and submitting forms might be among the alternative services provided, as well as m-voting. Authentication could require one-time passwords or user name and password combinations.

Approaches that involve basic models might provide a deeper and widespread penetration due their reliance on existing equipments, while sophisticated models require a more advanced mobile phone park. Therefore, it should be noted that sophisticated model would be limited in their diffusion to the citizens with high purchasing power limiting the value of the democratic and inclusion arguments.

6. Methodology

In order to reveal the current practices in Turkey and potential improvements, this paper adopted a novel approach. First, government officers that could be connected for e-government applications related issues have been listed. Secondly, officers have been phoned and their contribution to the study was sought by assuring full anonymity. For the following steps, only the officers who have agreed to participate had been enrolled for a three month period where they agreed to answer 4-5 open-ended questions weekly. Questions had been designed in English, and transferred to Turkish. To ensure translation consistency, Turkish questions should then also been translated to English. Upon the confirmation of the translation, questions had been sent. One follow up inquiry had also been processed to non-respondents. As part of this ongoing process, 13 expert set of responses to the first wave and 8 responses to the second wave were analyzed in this paper (total number of questions = 13 x 3 + 8 x 4 = 71). We extrapolate m-government applications related perspective from a general wording with e-government since it is the usual language and m-government applications are only emerging.

7. Results

Answers had been coded to uncover emerging themes via qualitative inquiry. Five major salient themes are emerging. These are 'real value added' by perceived usefulness, ease of use both from a technological and social perspective, transparency regarding processes and philosophy, trust and security, and finally the need for compatibility and infrastructure. Here, we define practice through three concepts involving (a) practitioners (people actually using / experiencing / creating), (b) practices as defined by Jarzabkowski, Balogun, and Seidl (2007) as '*the social, symbolic and material tools through which […] work is done*' and (c) praxis that embraces the flow, intensity and timing of activities.

7.1 Real value added by perceived usefulness
Perceived usefulness is defined in the literature as the level an individual perceives usage of a definite system as job performance enhancer (Davis , Bagozzi, & Warshaw, 1989; Venkatesh, Morris, Davis,

& Davis, 2003). Real value added is described by our respondents as representing a variety of concepts mainly related to time, convenience and difficulty level. This reflects the current underinvestment situation in most of Turkey's municipalities' service deliveries. There is also the perception that red tape can indeed be reduced through online channel.

"citizens can vote without physically going to the election desks if an online system allows them"(w1-12); "through an e-government facility, an ordinary citizen would be able to search for information, and complete transactions" (w2-4)[4]; "citizens are allowed to complete their transactions at shorter time, with a higher efficiency and quality […] both government's and citizens resources can thereby be consumed economically" (w2-13); "delivery of fast service (w2-5); "citizens can complete their transactions without the hassle of physically visiting government institutions […] fast access to searched information" (w2-9); "by using e-government, citizens will eliminate long queues and spend their time wisely" (w2-11); "e-government services are both time effective and less costly in terms of transportation needs" (w2-10); "resources like money and time can be used economically" (w2-13); "time effective" (w2-6); "the most advantageous side of e-government is that user citizen does not have to leave the house or contact with anyone else to receive the service" (w2-5).

7.2 Ease of use both from a technological and social perspective
Ease of use is defined in the literature as difficulty level an individual perceives in using an innovation (Moore & Benbasat, 1991; Venkatesh et al., 2003). Respondents in our data set underlined the importance of simplicity as they have mentioned the limited current usage of e-government applications.

"e-government services should be easy to use for the majority of the citizens" (w1-10); "as citizens will get used to similar high-tech provision of services, it will become easier for them to adopt e-government services […] currently implemented technology is sufficient to provide the aimed services, yet a simplified lean approach should be adapted to enlarge the user base" (w2-13).

Transparency regarding processes and philosophy

UN defines government transparency as facilitating access to citizens for information and their understanding of decision making processes.[5] ICT systems prove useful in promoting government transparency when designs allow citizens in understanding how government decisions are undertaken.[6] Respondents in our data set implied that e-government applications promote a more transparent governing structure both in terms of processes and philosophy. Better decision making, promoting participation and accountability had been listed as consequences of enhanced transparency.

"Contemporary e-government services lack desired levels of transparency" (w1-12); "e-government should aim at getting transparent, accountable, and promote participation" (w1-6); municipal's budgets should be audited by an independent authority and reports should be available online" (w1-7); "e-government will ensure bottom-up improvement among government institutions in terms of transparency, accountability, better decision making and promoting participation (w1-6); "most successful e-government applications to date are social security and centralized voter database. Unnecessary bureaucracy has been eliminated, information kept is assured to be updated, and the procedures become transparent" (w1-4); "e-government applications promote the transparency" (w2-11); "prevention of the harmful consequences due to inconsistencies among government officials' skill sets would be possible" (w2-5).

7.4 Trust and security
The concept 'trust' is defined as customers' expectations of whether the retailer will meet its promises (Rotter, 1971). In addition, security is defined as the condition of being protected against danger or loss (Monahan, 2006). Respondents in our data set have stated that there is a lack of trust on e-government applications due to past failures. Suggestions to ensure confidence in e-government

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[4] w*i-j* denotes week number *i*– respondent number *j*
[5] http://unpan1.un.org/intradoc/groups/public/documents/UN/UNPAN012062.pdf
[6] http://www.cdt.org/egov/handbook/transparency.shtml

systems involved communicating enhanced security measures as well as training citizens to use the system securely.

"citizens hesitate to use e-government as they don't feel confident about the system [...] government should communicate the assured security measures in detail and encourage citizens in using e-government service" (w1-12); "the biggest failure for e-government applications ever developed is MERNIS with erroneous data, misinformation, errors in inquiries" (w1-10); "various kinds of fraudulent activities that took place have led to mistrust for e-government" (w2-4); "citizens had material damages due to lack of security measures" (w2-11); "citizens who are not competent to use e-government systems had their private information unintentionally delivered to criminal activity related issues" (w2-10); "citizens with low education levels cannot reach the provision of e-government" (w2-9).

7.5 The need for compatibility and infrastructure
Compatibility is defined in the literature as the perceived degree of an innovation's consistency with potential adopters' established values, needs and past experiences (Moore & Benbasat, 1991; Venkatesh et al., 2003). Information technology infrastructure refers to software development tools, informal / formal channels of communication, and political / social networks (Van Schaik, 2006). Respondents in our data set referred to lack of compatibility between government institutions as well as out-dated technology as main reasons blocking wider e-government adaptation. One main government portal which shares information among government institutions by using single ID is suggested.

"Required infrastructure is expensive [...] needed standardized software equipment is lacking [...] e-government applications tend to vary across institutions. Technology should be updated and these systems should be integrated" (w1-6); "managers skillful to run e-government applications are rare, advanced hardware and software are lacked, personnel to acquire high-tech materials do not exist either [...] citizens should be able to conduct all their transaction by a single ID number. Any e-government applications developed with such an infrastructure would be successful. Individual government institutions should stop assigning different ID numbers at once and for all [...] e-government services do not employ advanced technology that the current user base requires" (w1-10); "systems and used software should be updated [...] though most of e-government applications are fast, they are not competent to work with high connected load" (w2-5); "e-government applications should use a single ID number. Coordination among government institutions should be completed" (w1-3); "A main e-government portal for Turkey should be completed. All e-government services should be accessible via one main portal" (w1-5).

8. Conclusion and Future Research

"A central premise is that, in today's society, the ability to access, adapt, and create knowledge using information and communication technologies is critical to social inclusion (Warschauer, 2004)."

This exploratory study centered on municipality officers' perceptions of the current e-government initiatives and m-government possibilities has led one major finding. Turkey is increasingly looking like a story of lost opportunities. A certain lack of macro-planning strategy seems to be perceived from a utilitarian perspective as the main obstacle to e-government initiatives at local level. Beyond this an evolution is required from within the government to allow the promises of e-government to be delivered (i.e., management generalisable techniques, rule base and standards, new order of power not based on hierarchy, coordination and integration of initiatives). Our respondents have also highlighted the current poor level of data quality, gaps in primary care of data (i.e., confidentiality, privacy), lack of coordination and accessibility between data collection and systems (i.e., interaction between innovation and social institutions). From a more personal perspective a clear lack of analytical capacity by most main agencies (i.e., micro-coordination: midcourse adjustment, iterative coordination, softening of schedules), a certain lack of funding, lack of ICT infrastructure have lead to some early de-motivation of the current civil servants

This research process has also underlined a difficulty in defining mobility in terms of the device ranging from notebooks, PDAs to cellular devices and the people, where the later might himself be mobile only and access m-government services through land lines. Future research should consider defining the concept concisely. This research has taken the perspective of the service designer / provider into account only. Future research should give emphasis to user acceptance and user attitude issues in relation to e/m-government to integrate both perspectives.

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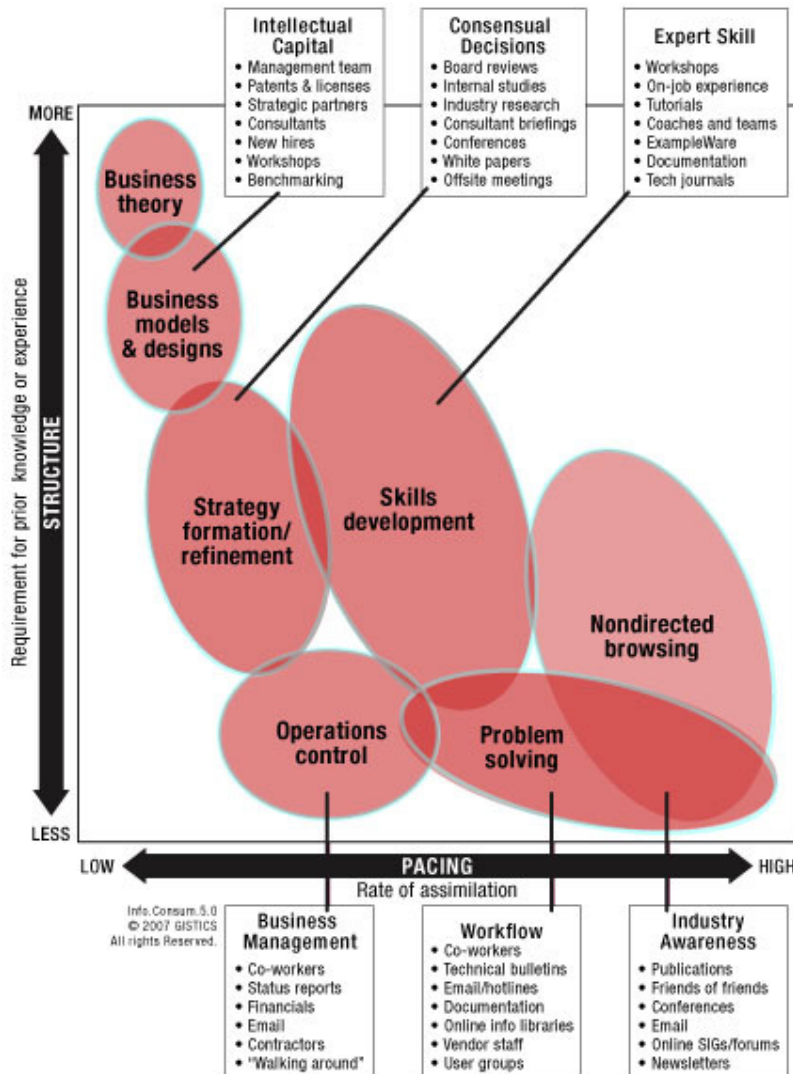
Figure 1. Seven basic categories of information that constitute the basic inputs of knowledge workers and, by extension, customers using interactive means of communicating with vendors.[6]