

CULTURES, ROLES, AND RESPONSIBILITIES OF STAKEHOLDERS IN MULTICULTURAL REQUIREMENTS ENGINEERING

Designing e-Commerce for Female Market in Saudi Arabia

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Abstract: Cultural differences affect all phases of systems development life cycle; from the planning phase all the way to the testing and maintenance. Modelling stakeholders is part of the requirements engineering phase, it helps analysts to understand the sociology of the system. Multicultural requirement engineering involves modelling stakeholders from different cultures. An in-depth analysis of stakeholders is essential to understand the influence of their culture on the roles and responsibilities assigned to them. Valuation framing is one of the organisational semiotics methods that analyse the impact of an innovation such as a new product or information system. It is based on Hall's ten primary message systems (PMS) or the taxonomy of cultural patterns of behaviour. It aims to understand the impact of culture on stakeholders in order to detect how people involved will be affected and how they will feel about the intended innovative change. This paper applies the valuation framing method to analyse the cultural influence of the stakeholders involved in developing e-commerce applications targeting female consumers in Saudi Arabia.

1 INTRODUCTION

Multicultural systems development is no longer a phenomenon, but rather a practice resulting from conscious business decisions. Both practitioners and researchers need to become aware of the ongoing cultural challenges that stakeholders face in their requirements engineering interaction. Due to its communication and collaboration-intensive nature, as well as the inherent interaction with most other development processes; requirements engineering is becoming a key challenge in multicultural systems development. Collaboration among stakeholder groups suffers from problems generated by differences in culture, language, attitudes towards hierarchy, and communication style. This creates a unique set of problems in the requirement engineering processes, which might lead stakeholders to tolerate ambiguity in requirements without recognising the need to collectively aim for shared understanding of requirements and its processes (Damian, 2007).

Involving the right stakeholders is one of the most difficult and common concerns among all

projects. Yet, stakeholders' identification is the most if not the only vital process to discover, specify, and test valid requirements (Alexander, et al., 2004). Some stakeholders involved in developing e-commerce applications targeting Saudi female market fully control their accessibility to these applications. Others have the authority on female consumers' adoption and use of these applications (Rambo and Liu, 2010). Cultural differences are the key determiner of stakeholders' different perspectives on the benefit of such innovation. It is essential to understand the complete picture of the social system in Saudi Arabia in order to understand the roles and responsibilities of stakeholders in the process of developing such innovation.

Valuation framing is one of MEASUR (methods for eliciting, analysing, and specifying user requirements) methods. It analyse the cultural impacts of innovation in a society members by examining Hall's ten cultural norms towards this innovation (Stamper, 1988). This paper aims to reveal the cultural impact of stakeholders in relation to the benefits and drawbacks which take into account the interests and beliefs of all stakeholders. Valuation framing method is used to help analysts

discover the cultural impact of each stakeholder on the design decisions of such innovation.

The remaining part of the paper is organised as follows: section 2 provides background information about Hall's ten primary message systems (PMS) organisational semiotics, valuation farming, stakeholder identification, and the social system in Saudi Arabia. Section 3 implements the valuation framing method to articulate the Saudi stakeholders' cultural influence on the development process of e-commerce targeting female market. Section 4 will discuss the method and findings of this paper. And finally section 5 will conclude the major aspects of the paper and align the findings with the future work of this research.

2 BACKGROUND

This section will briefly identify the main topics discussed in the paper and present general background information of the methods implemented in this paper. It will start by defining the Hall's ten primary message systems. Then it will explain how they are used in the method of valuation framing. And finally it will briefly discuss the main cultural aspects of the social structure in Saudi Arabia.

2.1 Hall's Primary Messages Systems (PMS)

The word *culture* (from the Latin 'colo,-ere', meaning 'to cultivate', 'to inhabit' or 'to honour') has been defined and used in many ways throughout different contexts. More than 156 different definitions for culture can be identified (Kroeber, et al., 1952) (Cultural Computing and the Self Concept: Towards Unconscious Metamorphosis, 2007). One of the most popular definitions of culture in the field of anthropology is suggested by the British anthropologist Edward Taylor in the nineteenth century. Taylor defines culture as "the complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society". Another more recent definition of culture by Downs "a mental map which guides us in our relations to our surroundings and to other people" (Ferraro, 2001).

One of the issues that concerned the anthropologist Hall was how one culture differs from another and how one can communicate this difference in general terms (Hall, 1959,1981). According to Hall, culture is not one thing but a

complex series of activities interrelated in many ways, activities with origins deeply buried in the past when there were no cultures or humans. The development of language and technology, an interrelated pair, made possible the storing of knowledge. Hall defined ten separate kinds of human activity which he labelled primary message systems (PMS). One can start the study of culture with any one of the ten and eventually come out with a complete picture. The primary message systems (PMS) are:

Interaction To interact with the environment is to be alive and to fail to do so is to be dead (Hall, 1959,1981), when two or more people or things communicate with or react to each other (Dictionaries, 2009), i.e. language, vocal inflections means of communication, posture, gesture, etc (Stamper, 1988).

Association All living things arrange their lives in some sort of recognisable pattern of association. The concern here is about the various ways in which societies and their components are organised or structured (Hall, 1959,1981), i.e. community, class, caste, roles, organisation, teams, hierarchy, etc (Stamper, 1988).

Subsistence is included in everything from individual food habits to the economy of a country (Hall, 1959,1981), i.e. physical livelihood, eating, excretion and (indirectly) income working for a living (Stamper, 1988).

Bisexuality (classification) Behaviour that is exhibited by male in one culture may be classed as feminine in another. All cultures differentiate between men and women, and usually when a given behaviour pattern becomes associated with one sex it will be dropped by the other (Hall, 1959,1981), i.e. differentiation of sexes, marriage, family (Stamper, 1988).

Territoriality It is a technical term used to describe the talking possession, use and defence of a territory on the part of living organisms. Salesmen and distributors have their own territories which they will defend like any other living organism. The symbolism of the phrase "to move in on someone" is completely accurate and appropriate (Hall, 1959,1981), i.e. division of space, where things go, where to do things, ownership (Stamper, 1988).

Temporality such practices as age-grading (in a society according to rather rigid age groups) combine both time and association (Hall, 1959,1981). It means long lead times, repetitive work because of iterations, many face to face meetings, i.e. division of time, when to do things, sequence duration, cycles (Stamper, 1988).

Learning and Acquisition people in different cultures learn to learn differently and go about the process of acquiring culture in their own way. Learning to learn differently is something that has to be faced by multicultural stakeholders who have stake in the same project. It seems inconceivable to the average person brought up in one culture that something as basic as this could be done differently from the way they themselves were taught. The fact is, however, once people have learned to learn in a given way, it is extremely hard for them to learn in any other way. This is because the process of learning they have acquired a long set of tacit conditions and assumptions in which learning is imbedded. The rest of culture reflects the way one learns, since culture is “learned and shared behaviour”. Learning, then, is one of the basic activities of life (Hall, 1959,1981). However, these differences represent one of the barriers that have to be overcome each time two people raised in different cultures interact over any but the shortest period of time, i.e. education, training, rearing, what gets taught or learned (Stamper, 1988).

Play people laugh and tell jokes, knowing the humour of people from different cultures, will give you a wealth of information about that specific culture. Many people around the world have what are known as “joking relationships”, also in some cultures, there is a category of relationship known as the “play mate” (Hall, 1959,1981), i.e. recreation, fun, games, art, sport, what is amusing (Stamper, 1988).

Defence (Protection) Human beings use defensive techniques in many matters in their lives such as warfare, territory, religion, medicine (against diseases), and law enforcement (against criminals). They feel they must cope within destructive forces within their own persons. The main point which should be kept in mind is about the way different cultures tend to treat religion. In the Middle East, Islam plays a more pervasive role than Christianity does today in Europe. People in the western world have difficulty grasping the extent to which religion pass through all aspects of life in the Arab world. The content of religion, its organisation, and the manner in which it is integrated with the rest of life varies greatly from culture to culture (Hall, 1959,1981), i.e. protection against elements, other groups, disease and the supernatural (Stamper, 1988).

Exploitation human beings developed extensions of practically everything we used to do with our bodies. All manmade material things can be treated as extensions of what was once done with the

body or some specialised part of the body (McLauhan, et al., 2001;Hall, 1959,1981). A transportation vehicle for example is an extension of what we use to do with our feet, i.e. tools, technology, systems, materials and their uses, skills (Stamper, 1988).

2.2 Valuation Framing

Valuation framing is a method proposed by MEASUR (methods for eliciting, analysing, and specifying user requirements) (Stamper, 1988). These techniques deals with matching the system design effort to the social and economic infrastructure, matching the communications subsystems to the informal exchange of information, and matching the control subsystem to the prevailing ethical practices.

Valuation framing takes Hall’s ten categories of cultural norms, slightly modifies them and applies them quite differently to gauging the impact of an innovation by treating the general culture and the subcultures of the stakeholders as though they were musical instruments made of resonant networks of strings that the innovation strikes to produce the reverberations of the stakeholders’ reactions that the IS designer must listen to. That’s a no trivial, quite novel and a useful extension of Hall’s work (Stamper, 1988).

After identifying all the involved stakeholders (stakeholders identification is another method from MEASUR) the valuation will be applied taken into account the interest of all stakeholders (Alexander, et al., 2004;Kolkman, 1993;Liu, 2000;Tan, 2006). The total system will be the object of valuation. The stakeholder will be accustomed to having, in his familiar cultural setting, a range of available behaviour patterns. These cultural patterns are divided into the ten areas discussed above and subsequently the analyst asks, hypothesizes or predicts how the proposed innovation will affect the stakeholders that were identified.

There will be impacts on how people communicate, how they associate, their subsistence or economic position, differential effects for the two sexes, their use of time(temporality) and space(territoriality), how they learn to use the new system, how it affects their creative or recreational behaviour, their vulnerability of power (protection), and their tools and skills (Kolkman, 1993;Tan, 2006).The technique of valuation framing assesses the cultural impact of technological innovation on all the stakeholders. Hall’s ten criteria are the criteria for a full assessment of gains and losses of each stakeholder in relation to the innovation or change in the social system (Tan, 2006).

2.3 Culture of Saudi Arabia

Saudi Arabia is an Islamic country, governed by Islamic Sharia law (Ahmed, 2008). Sharia literally means “The Way” and refers to the body of Islamic law codified by the Quran (Holy Book) and prophetic teachings and traditions (Esposito, et al., 2007). Islam acts as a primary force in determining the social norms, patterns of behaviour, values, traditions, obligations, and practices (Almunajjed, 1997; Al-Saggaf, 2004). While Islamic law is derived from various theological schools of jurisprudence interpreting Divine Law; these scholarly interpretations vary depending on the local customs and social traditions of a specific social reality and does not necessarily apply to other Islamic regions. For instance, some of the restrictions on Saudi female are mainly imposed by scholarly interpretations (Almunajjed, 1997; Esposito, et al., 2007; Rambo, et al., 2009).

The culture in Saudi Arabia does not permit women to mix with unrelated men. Gender segregation is a general norm that touches on virtually every aspect of public and social life. Education, banking, access to public transportation and job opportunities are still rooted in strongly held traditional values that do not permit the mixing of the sexes. Almost all public places have areas that are restricted to women. Restaurants have special family dining rooms for women. There are shopping centres exclusively for women, and certain boutiques in Jeddah have a closed door with ‘for Ladies only’ written on it. Busses are divided into two sections to create a separate seating area for women. Banks have women only branches (Almunajjed, 1997; Al-Saggaf, 2004; Rambo, et al., 2009).

There is a strong sense in the Arabian society of what is public and what is private. Women (in Saudi Arabia), belong to the private world (Lipsky, 1952; Almunajjed, 1997). In this segregated world the male-female dichotomy is linked to a public-private world where females are associated with the concept of indoors and males with the outdoors (Rambo, et al., 2010). Both gender and age plays a vital role in specifying roles and responsibilities in an Arabian family (Al-Sabt, 1996 - 2006). The father is usually the head of the family, the policy maker, and the provider of the family. While the mother is major role relies in raising children and managing the household. This structure is not necessarily the norm of these days Arabian families since mothers now also provide for their families. Sons and daughters are raised to follow the inherited traditions and are given responsibilities that suit their age and gender. Sons are usually taught to be protectors of their

sisters and help the father with male duties, while daughters are taught to be the source of emotional support in the family as well as helping the mother with other female duties in the house (Al-Sabt, 1996 - 2006).

Internet was introduced in Saudi Arabia between 1998-1999 after a long period of discussion and consultations with the Saudi authorities. It was finally agreed that a tailored version would be made available to the public. To enable this tailoring a huge filter system was set up in conjunction with an American company. The reason for having such a filter system was that the Saudi authorities had serious concerns about the arrival of undesirable materials to homes of the Saudi society via computer screens (Al-Saggaf, 2004; Sait, et al., 2004).

3 STAKEHOLDERS CULTURAL IMPACT ON E-COMMERCE DESIGN FOR FEMALES MARKET IN SAUDI ARABIA

The valuation system is based upon a number of interest groups or stakeholders. These will often belong to quite different subcultures with different sets of values but, moreover a proposed action course, especially an innovative one, tends to have rather different impacts on their lives, so amplifying the likely differences between the various stakeholder judgements (Kolkman, 1993).

Organisational semiotics provides two methods to conduct this kind of analysis. The two methods are complementary to one another because the former identifies the roles and responsibilities of stakeholders while the latter identifies the cultural perspectives of each stakeholder. There always must be people involved who attach values to the systems that we create, otherwise there is no point in having these systems, and normally there are several interest groups involved, the groups that attach positive or negative values to our system constitute the valuation framing. They include the agents who are affected by the system even when they have no primary role in creating and using it, provided that, in the long run they can affect its existence. This raise the following question in analyst’s mind “who are the people whose values determine whether the system is a success or not?” (Kolkman, 1993; Liu, 2000).

All stakeholders involved in developing B2C e-commerce applications targeting Saudi female market have already been identified and discussed in greater details in previous work (Rambo and Liu,

2010). As shown in table1 stakeholder groups come most likely from different cultures, some are locals and others are international ones. Stakeholders groups include: the government (legislators), male guardians (bystanders), high street retailers (competitors), electronic payment financial institutions (collaborators), online retailers or online shops owners and the website designers (providers), shipping and delivery companies (clients), internet service providers (principals), and the Saudi female market (actors). Each of these groups will have a cultural system that governs how it will value the development of e-commerce applications targeting the Saudi female market. Different stakeholders will more likely to react differently to the proposed project. To enable a comprehensive valuation, valuation framing has been developed which is based on the ten primary message systems classification of the cultural norms.

The basic principle of valuation framing is as follows: The stakeholder will be accustomed to having in her/his familiar cultural setting, a range of available behaviour patterns. These cultural patterns are divided into ten areas and subsequently the analyst asks, hypothesises or predicts how the proposed innovation will affect the stakeholders that were identified earlier (Rambo and Liu, 2010).

Without the checklist it is easy to overlook aspects of the situation which is analysed. Reactions, once identified can be expressed more clearly in terms of beneficial or disadvantages or even in terms which address specific feelings and attitudes.

Valuation framing can be used for making a quick scan of all stakeholders in a problem situation. This can result in an improved understanding of their cultural reverberations concerning both the existing situation and possible changes. The content of valuation framing is employed for detecting stakeholders' cultural perspectives which define certain types of action courses as a necessity or a desirable.

This section will provide examples of valuation of four different stakeholders from the four spheres identified in the stakeholder identification model. These examples will illustrate how culture can influence stakeholders' responses to the adoption and use of e-commerce applications. The first stakeholder example presented is the Saudi female consumers. Table 2 explains the ten cultural taxonomies of adopting and using e-commerce applications:

Table 1: Stakeholders Identification of e-commerce design in Saudi Arabia.

Online female consumer	Stakeholders Roles and Responsibilities		
	Stakeholder	Role	Responsibility
Contribution sphere	online female consumer(local)	Actor	To take the online purchasing action to receive the desired good
	Internet Service Providers(local)	Principal	To envision values of online shopping and connect all stakeholders together
Source sphere	Shipment and Delivery Companies(international or local)	Client	To gain benefit from performing online shopping and lose benefits when online shopping is not used
	Online Retailers Web designers(international and local)	Provider	To facilitate necessary conditions to perform online shopping
Market sphere	Electronic financial payment institutions (international and local)	Collaborator	To have some beneficial agreements with principals and providers from performing online shopping
	High street retailers (local)	Competitor	To share target market and resources with principals which leads sometimes to benefits collision. Only if High Street retailers are not available in online market.
Community sphere	Male Guardians (local)	Bystander	To have no direct involvement in online shopping but have a direct influence on the Actor's decision about online shopping
	(KACST) (CITC) (Saudi NIC)(local)	Legislators	To set out law, rules, regulations, procedures, and bureaucracies governing online shopping in Saudi Arabia

Table 2: Saudi female consumers' valuation framing.

	Saudi Female Consumers (Actors)
Subsistence	New frontier to enjoy shopping
Classification	suitable for a gender-segregated society
Territoriality	Convenience (worldwide shopping from home)
Temporality	Shopping 24/7 is suitable for all segments of female consumers
Learning	(usability issues) capable of learning online shopping processes
Play	Depending on design, can be quite amusing process
Protection	Security, confidentiality, privacy , and safe shopping
Exploitation	Limited needs to visit traditional shops
Association	Collective and masculine society, quite associated with family and male guardian's opinions
Interaction	Enable interaction with Arabic speaking female shopping assistant(s) and be aware of female social interaction preferences in a gender-segregated society

The second example of stakeholder's valuation framing exercise is e-shops or online retailers. Table 3 illustrates the valuation of e-shops or online retailers:

The third example of stakeholder's valuation framing exercise is high street shops or traditional retailers. Table 4 illustrates the valuation of high street shops or traditional retailers:

The fourth example of stakeholder's valuation framing exercise is the bystander or male-guardian in this context. Table 5 illustrates the valuation of male guardians:

Each category in the valuation framing is treated as a separate building block, capable of being analysed in its own terms without reference to the other systems. Distinct definitions of each category have been made which will help a user of the method in constructing a proper description of the various types of valuations.

Table 3: online retailers' valuation framing.

	Online retailers
Subsistence	Business profitability dependent on adoption of e-shopping
Classification	Such a target market in gender-segregated society and cultural constrains is a niche for successful business opportunities
Territoriality	global e-shops enables international orders
Temporality	Flexible timing allowing consumers to shop 24/7
Learning	Usability issues is online retailers (website designers) responsibility
Play	Amusing and engaging websites is online retailers (website designers) responsibility, i.e. virtual fitting rooms
Protection	Responsible for creating trustworthy websites that convey confidential, secure, and private interaction
Exploitation	e-shops are extensions of traditional shops (replace them)
Association	Awareness of the collective and masculine cultural natures of the society and influence of family on individuals (female consumers) decisions
Interaction	Responsible for providing websites that can establish rapport with clients through clear lines of trust and sufficient customer relationships managements

Table 4: High street shops valuation framing.

	High street retailers
Subsistence	Loss of clients means loss of business
Classification	No significant change
Territoriality	e-shops is more convenient than visiting shops especially within existing environmental and cultural constrains for female consumers
Temporality	Restrictions of opening times and closing for prayers make it easier for consumers to shop online
Learning	Once female consumers become confident in using e-shops they will rarely visit h.s. shops again
Play	If e-shops provide sufficient amusement and fun opportunities, female consumers will not look for fun else where
Protection	Once online shopping conveys safe, secure, confidential, and private shopping process. Female consumers will no longer need to visit h.s.shops. e-shopping generally

	endanger h.s.shops
Exploitation	h.s.shops can open online shops as extensions of their traditional shops and save their clients
Association	Successful business in Saudi Arabia is based on family bonds and social relations
Interaction	Cultural issues of interaction in h.s.shops and the fact that sales people are males creates constraints in shopping which can be replaced sufficiently with effective e-shops designs

Table 5: Male-guardian’s valuation framing.

	Male-guardian
Subsistence	From a provider perspective; easier way to spend more money
Classification	Satisfy gender-segregated society norms
Territoriality	Convenience as no need to take female to h.s.shops and save long waiting hours
Temporality	Convenience as no waiting for opening times is required
Learning	As long as it is easy and reliable for female consumers to use them
Play	Joyful websites encourages using it. keeping in mind socio-cultural norms of joy within a society
Protection	Ensure that it does not contain any inappropriate content, safe, secure, confidential, and private.
Exploitation	Limited need to visit traditional shops
Association	Ensure that is does not endanger family bonds and enable group shopping or family e-shopping facilities
Interaction	Ensure that it does not endanger socio-cultural interaction norms within a society

4 DISCUSSION

Studies show that majority of the software development projects fail because of lack of understanding the requirements clearly and non-involvement of key stakeholders. For the successful software product to be developed it is important to identify relevant stakeholders and involve them during requirements elicitation process. Conflicts in requirements of different stakeholders are bound to happen. These conflicts have to be negotiated and balanced in order to develop a competitive product.

This paper has clarified that multicultural stakeholders will more likely have different perspectives on the features and design decisions on the product. Also the female consumers’ decision of adopting e-commerce applications is influenced by stakeholders roles and responsibilities, for instance the male guardian’s perception of e-commerce applications - whether he accepts the adoption or rejects it - will influence her decision. Also, the facilities provided by the financial institutions will affect the female consumers’ decision (as in providing other payment options than credit cards payment since people in Saudi Arabia are not encouraged to use credit cards due to religious reasons which prohibits them to get involved in financial transactions that include interest fees. this indicates the need to provide other payment options by financial institutions). Also, the sufficiency of the shipment and delivery companies has a major influence on the female consumers’ decision in terms of their commitment to deliver the items punctually, conditions of items...etc.

The online retailers’ website presentation and services can be categorised as the most important factor in the online shopping mechanism as it facilitates the environment which enables the female consumer to carry out the whole process of purchasing online. It provides the look, feel, and presence of shopping without the physical need to carry out the action. It is also essential to mention the role of Internet service providers and the quality of the connection they provide which is reflected on the online shopping process sufficiency and accuracy. While the high street shops are competitors of online retailers in terms of services, prices, offers, display, quality, services etc. They will probably be influenced negatively by the introduction of such a product.

5 CONCLUSIONS

This paper provides analysis of the cultural impact on the responses of each of the stakeholders involved in the development of e-commerce applications targeting female consumers in Saudi Arabia. The information provided in this paper will enable analysts and designers to point out some requirements that should be considered while designing online shopping applications targeting the Saudi female market.

According to the theoretical analysis implemented in the paper it is found that introducing e-commerce applications to the Saudi female market is not enough for her to adopt and use these applications. This decision is made in cooperation with other

stakeholders after examining the suitability if these applications to the cultural and moral beliefs of the region. Failing to consider these cultural influences in the product preparation will probably result in failing the adoption and use of these applications.

Future work in this regard aims to implement empirical investigations towards the influence of cultural factors on the design and adoption of e-commerce applications in Saudi Arabia. This requires modelling the social reality of e-commerce in Saudi Arabia as well as the mental models of the users (Saudi female consumers). Also identifying the socio-cultural norms and incorporating them in the design guidelines of these applications via implementing the Semantic Analysis Method (SAM) and Norm Analysis Method (NAM) offered by the organisational semiotics analysis discipline.

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